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National Center of Forest Health Management

TECHNOLOGY
TRANSFER

Diflubenzuron

Diflubenzuron Database

Amy Onken
Richard Reardon
John Barry



Pesticide Precautionary Statement

This publication reports on the insect growth regulator Diflubenzuron, Dimilin®. It does not contain recommendations for insecticide use, nor does it imply that the uses discussed here have been registered. All uses of insecticides must be registered by appropriate State and/or Federal agencies before they can be recommended.

Caution: Insecticides may be injurious to humans, domestic animals, desirable plants, and fish or other wildlife if they are not handled or applied properly. Use all insecticides selectively and carefully. Follow recommended practices for the disposal of surplus insecticides and insecticide containers.

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DIFLUBENZURON DATABASE

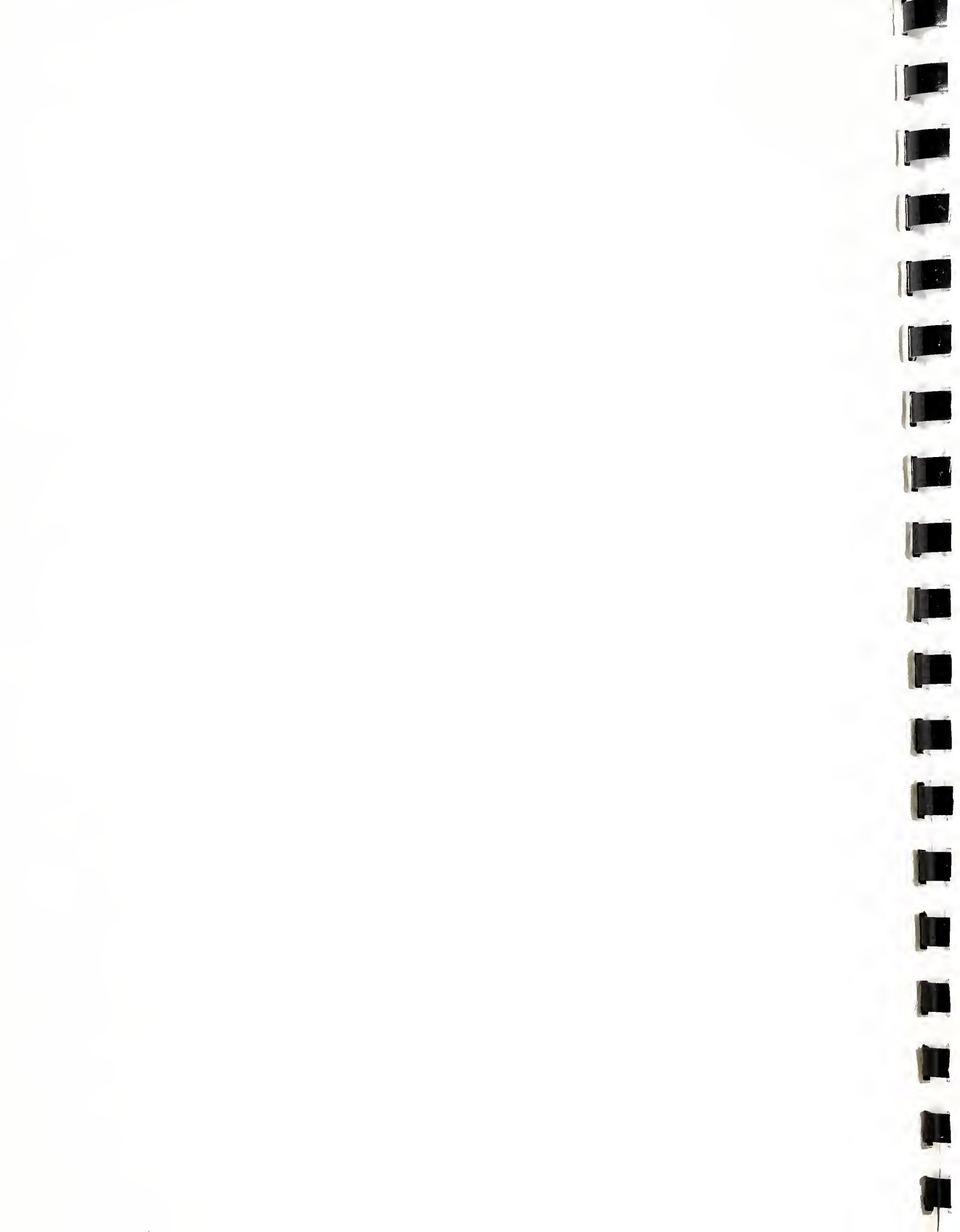
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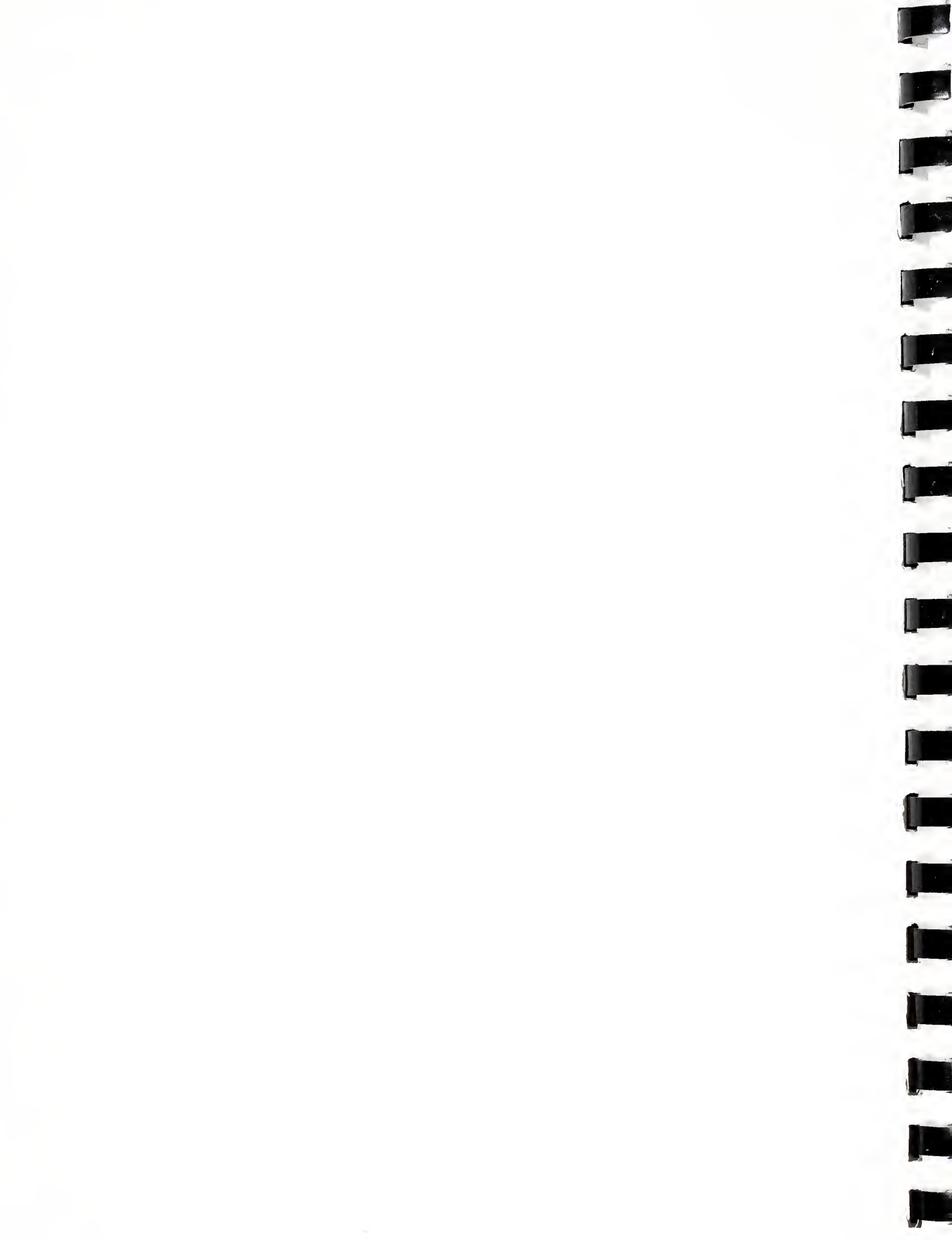
Management of Western Defoliators National Steering Committee
Management of Gypsy Moth and Eastern Defoliators National Steering
Committee



Preface

This publication is the second in a series (FHM_NC-02-94) supported by the USDA Forest Service, National Center of Forest Health Management in Morgantown, WV.

The National Center of Forest Health Management was established in April 1993 for the purpose of accelerating development and use of environmentally acceptable technologies to improve the health of America's forests. The Center has national responsibility to address technology needs that are key for successful integrated pest management of major forest insects and diseases, and for the successful management of forest ecosystems.



Introduction

Diflubenzuron Database

A DIFLUBENZURON DATABASE is installed and maintained by the National Center of Forest Health Management at the USDA Forest Service Laboratory in Morgantown, West Virginia. The DIFLUBENZURON DATABASE will allow you to search for specific articles by author, year, or key word. Currently the database is organized in alphabetical order by authors name and will be updated every 6 months.

File Description

The DIFLUBENZURON DATABASE contains citations from the computerized information retrieval service , BIOSIS, and manual searches from the National Agricultural Library (NAL) located in Beltsville, MD. Both databases include over 9,000 primary journals and monographs, as well as books, technical reports, meeting abstracts, annual reviews, and research communications from 1969 to the present.

BIOSIS and NAL databases were scanned for records containing the subject "Dimilin" or "Diflubenzuron" and a total of 1388 records were obtained. Abstracts are available, but only from records received from the BIOSIS database. Records received from the NAL database contain only citations.

Format of Diflubenzuron Database

Since the DIFLUBENZURON DATABASE contains citations from both the BIOSIS and NAL databases, the records are presented in two different formats.

Citations from the BIOSIS Database include

Title
Author
Source
Year
Full Journal Title
Language
Abstract
Descriptor/Keywords

Citations from the NAL database include:

Author
Year
Title
Source

Searching the Database

A file search can be conducted in several ways. The value to be searched will return records that contain the value in the title, abstract, or key words. Examples: Search for "chitin" would find records that contained the word chitin. Search for "anni" would find records that contained tannins, tannin, or mannitol. Search for "1988" would find records that were published in 1988. Once a search is complete, the user can request that the records be printed or downloaded onto diskettes. Any requests for an electronic copy of all records in the entire database will not be honored due to an agreement between the USDA Forest Service and database services.

If you have any questions or would be interested in obtaining records from the DIFLUBENZURON DATABASE, please contact: Amy H. Onken

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Morgantown, WV 26505
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Record - 1

ABBASSY, M.A., M. ASHRY, M.A. SALAMA. 1980. ELECTIVE EFFECTS OF DIFLUBENZURON AND TRIFLURON (SIR 8514) AND DIFLUBENZURON-RESISTANCE IN SPODOPTERA LITTORALIS (BOISD.). MEDEDELIGEN VAN DE FACULTEIT LANDBOUWWETENSCHNAPPEN RIJKSUNIVERSITEIT. 45(3):721-726.

Record - 2

SOME BIOCHEMICAL EFFECTS OF DIFLUBENZURON ON THE AMERICAN BOLL WORM
HELIOTHIS ARMIGERA HBN

ABDEEN S A O; GADALLAH A I; SALEH W S; HOSSEIN N M; EL-LATEEF M F A

ANN AGRIC SCI (CAIRO) 31 (2). 1986. 1463-1478.

Full Journal Title: Annals of Agricultural Science (Cairo)

Language: ENGLISH

ABSTRACT

All tested diflubenzuron concentrations were toxic to *H. armigera* 4th instar larvae by oral uptake; also, it can possess a latent effects. Larvae treated with LC25 of diflubenzuron showed an increase in esterases activity, but acid phosphatase activity was decreased after 48, 72 and 96 hrs of treatment then the activity increased. An increase in haemolymph soluble protein was found in treated larvae. Also an increase in the density of electrophoretic protein band throughout the first two days post-treatment and gradually decreased until the prepupal stage.

Descriptors/Keywords: INSECT GROWTH REGULATOR, ESTERASE, ACID PHOSPHATASE ACTIVITIES, HEMOLYMPH, PROTEINS

Record - 3

COMPARATIVE TOXICITY OF SOME MOLT INHIBITING INSECTICIDES TO THE GYPSY MOTH LYMANTRIA DISPAR

ABDELMONEM A H; MUMMA R O

J ECON ENTOMOL 74 (2). 1981. 176-179.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

The 3rd and 5th larval instars of gypsy moth, *L. dispar* (L.), were fed on treated diet containing various concentrations (0.0-0.8 ppm) of molt-inhibiting insecticides, L 7063 (N-[[[5-(4-bromophenyl-6-methyl-2-pyrazinyl)amino]carbonyl]-2-chlorobenzamide), L 1215 (2,6-dimethoxy-N-[5-[4-tafluoroethoxy)phenyl]-1,3,4-thiadiazole-2-yl]benzamide) and diflubenzuron, and the larvae were scored for molting abnormalities. EC50 values for L7063, L 1215 and diflubenzuron for failure of the 3rd instar to molt to the 4th instar were 0.176, 0.513 and 0.052 ppm, and for failure to molt the 2nd time (to the 5th instar) were 0.075, 0.175 and 0.009 ppm, respectively. EC50 values for failure of the 5th instar to molt to pupae (.male.) or to the 6th instar (.female.) were 0.094, 0.531 and 0.122 ppm, respectively. Continuous feeding of 3rd instars until pupal formation on diet containing L 7063 or diflubenzuron resulted in lower EC50 values of 0.009 and 0.006 ppm, respectively. Diflubenzuron was more toxic to the 3rd instar, but L7063 was most toxic to the 5th instar. The slopes of the probit regression lines varied between compounds and instar treated which implies variation in mechanism of action or chemical or physical processes.

Descriptors/Keywords: L-7063 N-5-4

BROMOPHENYL-6-METHYL-2-PYRAZINYLAMINOCARBONYL-2-CHLORO BENZAMIDE, L-1215 2,6-DIMETHOXY-N-5-4-PENTAFLUOROETHOXYPHENYL-1,3,4-THIADIAZOL-2-YL, DIFLUBENZURON

Record - 4

DIMILIN TH-6040 EFFECTS ON THE SPINY BOLL WORM EARIAS INSULANA LEPIDOPTERA PHALAENIDAE

ABID M K; GHOBRIAL A; ELHAIDERI H S; ABBS S A

Z ANGEW ENTOMOL 85 (3). 1978 321-324.

Full Journal Title: Zeitschrift fuer Angewandte Entomologie

Language: ENGLISH

ABSTRACT

Effect on dimilin on the 3rd instar larvae of the spiny bollworm, *E.insulana* was studied in the laboratory at 25 \pm 2.degree. C and 70 \pm 5% RH [relative humidity] at Abu-Ghraib, Iraq. Different parts of the larvae could not molt normally; and inability to completely shed the exuviae was observed. Abnormalities in mouth parts, thoracic region and abdominal areas were observed, leading to larval death. Affected larvae lived from 4 to 5 days posttreatment; severely deformed individuals frequently died within 3 days. After topical application with 12.5 μ g Dimilin/ arva 42.5% of the larvae died within 7 days.

Descriptors/Keywords: INSTAR, LARVAE, TEMPERATURE, RELATIVE HUMIDITY, ABNORMAL MOLTING, SHED, EXUVIAE, ABNORMAL MOUTH PARTS, ABNORMAL THORAX, ABNORMAL ABDOMEN, LARVAL DEATH, DEFORMED LARVA, TOPICAL APPLICATION, IRAQ

Record - 5

EFFECTIVENESS OF DIFLUBENZURON ON BOLL WEEVILS ANTHONOMUS GRANDIS IN CENTRAL TEXAS USA RIVER BOTTOMS AREA

ABLES J R; HOUSE V S; JONES S L; BULL D L

SOUTHWEST ENTOMOL 0 (SUPPL. 1). 1980. 15-21.

Full Journal Title: Southwestern Entomologist

Language: ENGLISH

ABSTRACT

In tests during 3 consecutive years, applications of the insect growth regulator (IGR) diflubenzuron caused substantial reductions in adult boll weevil emergence from field-collected infested [cotton] squares. Maximum reductions were produced 3-6 wk after initiation of treatments after which an apparent influx of untreated weevils reduced the effects of the IGR. Results in 1976 demonstrated a distinct difference in weevil responses to different doses of the IGR. In that year season averages of boll weevil mortality were 46.4, 67.4 and 77.3% at the 35, 70 and 140 g AI[active ingredient]/ha rates, respectively. Optimum use of diflubenzuron in the central Texas River Bottoms and other areas may involve other strategies such as area-wide treatments, planting of rapidly fruiting determinant cotton varieties and fall diapause control programs.

Descriptors/Keywords: COTTON, FALL DIAPAUSE, CONTROL, MORTALITY

Record - 6

EFFECT OF DIFLUBENZURON ON ENTOMOPHAGOUS ARTHROPODS ASSOCIATED WITH COTTON

ABLES J R; JONES S L; HOUSE V S; BULL D L

SOUTHWEST ENTOMOL 0 (SUPPL. 1). 1980. 31-35.

Full Journal Title: Southwestern Entomologist

Language: ENGLISH

ABSTRACT

In laboratory studies the insect growth regulator (IGR) diflubenzuron was tested for harmful effects against several species of entomophages. While the IRG had no adverse effects on *Geocoris punctipes* (Say), *Apanteles marginiventris* (Cresson) and *Trichogramma pretiosum* (Riley), mortality of immature stages occurred in *Hippodamia convergens* Gueren-Meneville and *Chrysopa carnea* Stephens. The

deleterious effects subsided if treatments were discontinued. Laboratory and field studies showed that Savol, the parafinic crop oil with which the IGR is formulated, was toxic to some predators and reduced parasitism of *Heliothis virescens* (F.) eggs by *T. pretiosum*. Field studies demonstrated reduced populations of *Geocoris* and *Nabis* spp. in soybeans and *Geocoris* spp. in cotton. When applied to cotton at the recommended rate for field use, 70 g AI[active ingredient]/ha, diflubenzuron is less harmful to populations of entomophagous arthropods than are most conventional insecticides.

Descriptors/Keywords: GEOCORIS-PUNCTIPES, APANTELES-MARGINIVENTRIS, TRICHOGRAMMA-PRETIOSUM, HIPPODAMIA-CONVERGENS, CHRYSOPA-CARNEA, HELIOTHIS-VIRESCENS GEOCORIS NABIS-SPP, SOYBEAN, COTTON, MORTALITY, SAVOL

Record - 7

EFFECT OF DIFLUBENZURON ON BENEFICIAL ARTHROPODS ASSOCIATED WITH COTTON

ABLES J R; JONES S L; BEE M J

SOUTHWEST ENTOMOL 2 (2). 1977 66-72.

Full Journal Title: Southwestern Entomologist

Language: ENGLISH

ABSTRACT

Aerial applications (9) of diflubenzuron at rates of 0.03, 0.06, and 0.12 lb/acre a.i. [active ingredient] to 5-acre plots of cotton did not appear to adversely affect populations of beneficial arthropods. In laboratory studies the parasitic wasp *Trichogramma pretiosum* Riley was not affected, but diflubenzuron was detrimental to 2 spp. of predators, the convergent lady beetle *Hippodamia convergens* Guerin-Meneville, and a green lacewing *Chrysopa carnea* Stephens. Feeding and topical treatments at 5 ppm diflubenzuron reduced egg viability, larval survival, pupation and adult emergence in *C. carnea*. Topical sprays (7.7 ppm) on *H. convergens* had similar effects, but both predatory species gradually recovered after treatments were terminated.

Descriptors/Keywords: TRICHOGRAMMA-PRETIOSUM, HIPPODAMIA-CONVERGENS, CHRYSOPA-CARNEA, GROWTH REGULATOR, INSECTICIDE, PARASITE, PREDATOR, EGG VIABILITY, LARVAL SURVIVAL, PUPATION, EMERGENCE

Record - 8

ABLES, J. R., R. P. WEST, AND M. SHEPARD. 1975. RESPONSE OF THE HOUSE FLY MUSCA DOMESTICA AND ITS PARASITOIDS TO DIMILIN (TH-6040). J. ECON. ENTOMOL. 68(5):622-624.

Record - 9

ABO-ELGHAR, M. R. AND A. GHATTAS. 1983. CORRELATION BETWEEN THE TESTING METHODS AND THE EFFICIENCY OF THE GROWTH REGULATOR DIMILIN AND SOME COMBINATION WITH ORGANOPHOSPHORUS INSECTICIDES AGAINST THE COTTON LEAFWORM SPODOPTERA LITTORALIS (BOISD.). ANNALS OF AG. SCIENCE (MOSHTOHOR), 19(2):507-514.

Record - 10

A NEW INSECT GROWTH REGULATOR COMPOUND AS SOIL PESTICIDE AGAINST LARVAE AND PUPAE OF SPODOPTERA LITTORALIS

ABO-ELGHAR M R; RADWAN H S A; AMMAR I M A

ACTA AGRON ACAD SCI HUNG 31 (3-4). 1982. 328-332.

Full Journal Title: Acta Agronomica Academiae Scientiarum Hungaricae

Language: ENGLISH

Descriptors/Keywords: DIMILIN, PH-6040, DURSBAN, GARDONA, MALFORMATION, EMERGENCE,

MORTALITY

Record - 11

FIELD EVALUATION OF CERTAIN INSECTICIDES FOR OVICIDAL ACTIVITY OF THE COTTON LEAFWORM SPODOPTERA LITTORALIS

ABO-ELGHAH M R; EL-KEIE I A; MITRI S H; RADWAN H S

Z ANGEW ENTOMOL 89 (1). 1980. 100-104.

Full Journal Title: Zeitschrift fuer Angewandte Entomologie

Language: ENGLISH

ABSTRACT

Three candidate insecticides, chlordimeform, diflubenzuron and diflubenzuron/endosulfan were evaluated under field conditions as ovicides. Diflubenzuron and /or diflubenzuron/endosulfan exhibited an inhibitory activity in suppressing the number of deposited egg-masses. Chlordimeform showed an attraction to the cotton leafworm moths and increased the number of egg-masses laid. Diflubenzuron/endosulfan and diflubenzuron alone exerted the highest ovicidal activity, since a percentage of nonhatched egg-masses was achieved. Regarding larvicidal activity, chlordimeform was the most potent tested compound against neonate larvae. Bollworm infestation percentage was reduced in chlordimeform-treated plots, compared with inferior results observed in other treatments. There was an adverse effect on the population and/or activity of prevailing biological agents, demonstrated by reduction in percentage of egg-masses attacked by beneficial insects in all treated plots in comparison to those of the control.

Descriptors/Keywords: CHLORDIMEFORM, DIFLUBENZURON, ENDOSULFAN, NONHATCHED EGG MASS

Record- 12

AGRICULTURAL CHEMICALS. 1983. DIMILIN-25W, TECHNICAL DATA SHEET. UNIROYAL CHEMICAL COMPANY.

Record - 13

FIELD EVALUATION FOR THE POPULATION CONTROL OF MUSCA DOMESTICA DIPTERA MUSCIDAE IN CHICKEN MANURE WITH DIFLUBENZURON

AGUIRRE-URIBE L A; LOZOYA-SALDANA A; LUIS-JAUREGUI A; QUINONES-LUNA S; JUAREZ-RAMOS F

FOLIA ENTOMOL MEX 0 (83). 1991(1992). 143-151.

Full Journal Title: Folia Entomologica Mexicana

Language: SPANISH

ABSTRACT

The insecticide efficiency of diflubenzuron was evaluated in *Musca domestica* larvae in chicken manure in a poultry farm in San Jose de los Cerritos, Saltillo, Coahuila [Mexico]. With the highest dosage (0.01%) 99.1% abnormal pupae was obtained and 89.5% was obtained with the lowest dosage (0.05%) whereas only 3.2% was obtained in the check. Percent adult emergence observed was 11.3% and 35.3% on the higher and lower dosage respectively as compared with 82.6% in the check.

Descriptors/Keywords: INSECTICIDE, PUPAL ABNORMALITY, ADULT EMERGENCE, MEXICO

Record - 14

EFFECT OF DIMILIN DIFLUBENZURON ON THE FECUNDITY FERTILITY AND PROGENY DEVELOPMENT OF DYSDERCUS CINGULATUS HEM. PYRRHOCORIDAE

AHMAD E

J APPL ENTOMOL 114 (2). 1992. 138-142.

Full Journal Title: Journal of Applied Entomology

Language: ENGLISH

ABSTRACT

Dimilin, a chitin inhibitor, plays very significant role in control of certain insect pests because it is very specific to the insect and found to be least toxic to the other organisms. Its application on the nymphs of *Dysdercus cingulatus* not only caused dose-dependent nymphal mortality but also caused significant reduction in the fecundity and fertility of the adults and progeny development. The reduction was more pronounced in 5th instar treated nymphs than those of 4th instar. However, applied doses did not reduce the fecundity and fertility of the females developed from F1 progeny.

Descriptors/Keywords: CHITIN INHIBITOR, TOXICITY, NYMPH MORTALITY

Record - 15

ACCUMULATION OF DIFLUBENZURON IN BOLTI FISH OREOCHROMIS NILOTICUS

AHMED M T; EID A H

NAHRUNG 35 (1). 1991. 27-31.

Full Journal Title: Nahrung

Language: ENGLISH

ABSTRACT

Oreochromis niloticus fingerlings were exposed to the insect growth inhibitor diflubenzuron 1-(2,6-Difluorobenzyl)3-(4-chlorophenyl)urea for 21 days. Diflubenzuron was introduced to the aquariums where fish were maintained at the beginning of the experiment, then its level in water, gills and liver was detected after 1, 7, 14 and 21 days. The fish accumulated diflubenzuron 76 and 99 times greater than the water content when kept in an ambient concentration of 2.5 and 5 mg/l, respectively, indicating a low bioaccumulation potential. Some degradation products of diflubenzuron were found mainly in liver and water.

Descriptors/Keywords: GILLS, LIVER, POSSIBLE FOOD INSECTICIDE CONTAMINATION
BIOACCUMULATION, RATIO, WATER CONTENT, TOXICANT STORAGE, TOXICANT
METABOLISM, EGYPT

Record - 16

THE EFFECT OF SOME BENZOYLPHENYL UREA COMPOUNDS ON SPERM TRANSFER
STERILITY MORTALITY AND EGG VIABILITY OF SPODOPTERA LITTORALIS

AHMED M T

INTERNATIONAL SYMPOSIUM ON CROP PROTECTION, PART B. MEDED FAC
LANDBOUWWET

RIJKSUNIV GENT 52 (2 PART B). 1987. 485-494.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: DIFLUBENZURON, TRIFLUMURON, CHLORFLUAZURON

Record - 17

SOME STUDIES ON THE DEVELOPMENT OF RESISTANCE TO DIFLUBENZURON IN THE
EGYPTIAN COTTON LEAFWORM

AHMED M T; AHMED Y M; MOUSTAFA A S

INTERNATIONAL SYMPOSIUM ON CROP PROTECTION, PART B. MEDED FAC
LADBOUWWET

RIJKSUNIV GENT 52 (2 PART B). 1987. 477-484.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: SPODOPTERA-LITTORALIS, PHENOL, OXIDASE ACTIVITY

Record - 18

PRELIMINARY STUDIES ON THE EFFECTS OF DIFLUBENZURON DIMILIN ON TERMITES ISOPTERA

AHMAD M; SALIHAH Z; SULTANA N; AHMAD S
NUCLEAR INST. FOOD AGRIC., TARNAB, PESHAWAR.
PAK J ZOOL 18 (4). 1986. 403-410.

Full Journal Title: Pakistan Journal of Zoology

Language: ENGLISH

ABSTRACT

Preliminary studies on the effects of Diflubenzuron (Dimilin) on five species of termites have been made. It is reported that the chemical caused 100 percent mortality in the nymphs of *Coptotermes heimi* (Wasmann), *Heterotermes indicola* (Wasmann) and *Microcerotermes championi* Snyder. The fecundity of *Odontotermes lokanadi* Chatterjee and Thakur and *Microtermes unicolor* Snyder was significantly reduced, and the egg viability completely suppressed.

Descriptors/Keywords: COPTOTERMES-HEIMI, HETEROTERMES-INDICOLA,
MICROCEROTERMES-CHAMPIONI, ODONTOTERMES-LOKANADI, MICROTERMES-
UNICOLOR, WOOD PEST, EGG VIABILITY, FECUNDITY, MORTALITY

Record - 19

SUSCEPTIBILITY OF EMBRYONIC AND POSTEMBRYONIC DEVELOPMENTAL STAGES OF RIPTORTUS CLAVATUS HEMIPTERA ALYDIDAE TO DIFLUBENZURON

AHN Y J; KIM G H; CHO K Y
KOREAN J APPL ENTOMOL 31 (4). 1992. 480-485.

Full Journal Title: Korean Journal of Applied Entomology

Language: ENGLISH

ABSTRACT

Laboratory studies were done to evaluate the effects of diflubenzuron on embryonic and post-embryonic development of *Riptortus clavatus* Thunberg. Diflubenzuron prevented egg hatch; younger eggs (0-12 h old) were 2 times as susceptible as older (48-60 h old) eggs, but embryos of both younger and older eggs developed normally. Susceptibility of nymphs to diflubenzuron decreased with each successive molt. Compared with the first instar, relative tolerance to diflubenzuron was 1.5 times for the second instar, 18.2 times for the third instar, 39.4 times for the fourth instar and 42.4 times for the fifth instar. Even at low concentrations, diflubenzuron prevented significant numbers of third instar nymphs from developing to fourth and fifth instar nymphs or adults. Weight, longevity and fecundity of adults surviving treatment in the final (fifth) instar were also adversely affected.

Descriptors/Keywords: BEAN BUG, OVICIDAL, EFFECT EGG HATCH, WEIGHT, LONGEVITY,
FECUNDITY

Record - 20

MORPHOGENETIC EFFECTS OF THE POLY CHLORINATED BI PHENYL AROCLOR 1254 AND PHENO BARBITAL ON AEDES AEGYPTI LARVAE

AKOV S
ISR J ENTOMOL 11 1976. 109-124.

Full Journal Title: Israel Journal of Entomology

Language: ENGLISH

ABSTRACT

Metamorphosis and adult emergence of *A. aegypti* larvae was inhibited by the polychlorinated biphenyl, Aroclor 1254 and the drug phenobarbital. The morphogenetic effects of Aroclor 1254 and phenobarbital were similar to those obtained with low dosages of methoprene and TH-6040 [Dimilin]. The possible mechanisms for obtaining a typical juvenile hormone-like effect by various unrelated chemicals were discussed.

Descriptors/Keywords: DIMILIN, INSECTICIDE GROWTH REGULATOR, JUVENILE HORMONE, METAMORPHOSIS

Record - 21

ALBERT, R. 1984. USABILITY OF AN ARBORAL PHOTO-ELECTOR FOR TESTING THE EFFECTIVENESS OF THE INSECT GROWTH REGULATORS DIMILIN 25 WP AND BAYER SIR 8514 ON OPEROPHTHERA BRUMATA L. ANZEIGER FUR SCHADLINGSKUNDE, PFLANZENSCHUTZ, UNWELTSCHUTZ 57(3):51-54.

Record - 22

DIFLUBENZURON APPLICATION TO CITRUS AND ITS IMPACT ON INVERTEBRATES IN AN ADJACENT POND

ALI A; NIGG H N; STAMPER J H; KOK-YOKOMI M L; WEAVER M

BULL ENVIRON CONTAM TOXICOL 41 (5). 1988. 781-790.

Full Journal Title: Bulletin of Environmental Contamination and Toxicology

Language: ENGLISH

Descriptors/Keywords: INSECTICIDE, WATER POLLUTION, ZOOPLANKTON

Record - 23

ALI, A., J.K. NAYAR, AND M.L. KOK-YOKOMI. 1987. EVALUATION OF NEW EXPERIMENTAL INSECT GROWTH REGULATORS AGAINST MOSQUITOES (DIPTERA: CULICIDAE) AND MIDGES (DIPTERA: CHIRONOMIDAE) IN THE LABORATORY. PROC. PAP. ANN. CONF. CALIF. MOSQ. AND VECTOR CONTROL ASSN. 1987. VOL 55, PP 81-86. SACRAMENTO, CA.

Record - 24

ALI, A., AND B. H. STANLEY. 1981. EFFECTS OF A NEW INSECT GROWTH REGULATOR, UC-62644, ON TARGET CHIRONOMIDAE AND SOME NON-TARGET AQUATIC INVERTEBRATES. MOSQUITO NEWS. 41(4):692-701.

Record - 25

EVALUATION OF INSECT GROWTH REGULATORS AGAINST FLORIDA USA CHIRONOMIDS EFFECTS ON AQUATIC NONTARGET INVERTEBRATES

ALI A

48TH MEETING, ANAHEIM, CALIF., USA, JAN. 20-23, 1980. PROC PAP ANN CONF CALIF MOSQ VECTOR CONTROL ASSOC INC 48 (0). 1980 . 99.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: CHIRONOMUS-DECORUS, GLYPTOTENDIPES-PARIPES, CYCLOPS-SPP, CHAOBORUS BAETIS-SP, DIFLUBENZURON, 2 METHOXY-9-4-ISOPROPYLPHENYL-2 6-DIMETHYL NONANE 1-4 ETHYLPHENOXY-6 7-EPOXY-3 7-DIMETHYL-2 OCTENE,

INSECTICIDES

Record - 26

IMPACT OF EXPERIMENTAL INSECT GROWTH REGULATORS ON SOME NONTARGET AQUATIC INVERTEBRATES

ALIA; LORD J

MOSQ NEWS 40 (4). 1980. 564-571.

Full Journal Title: Mosquito News

Language: ENGLISH

ABSTRACT

Adverse effects of 3 IGR [insect growth regulators], 25% WP [wetable powder] of diflubenzuron, 25% WP and 0.5% G [granular formulation] of Bay SIR-8514 [1-(4-trifluoromethoxyphenyl)-3-(2-chlorobenzoyl)-urea] and EC-4 [emulsifiable concentrate] of MV-678 [2-methoxy-9-(4-isopropylphenyl)-2,6-dimethylnonane] were studied, when evaluated for chironomid control in a few experimental ponds, a sewage polishing-pond and a natural pond on aquatic nontarget invertebrates. WP and G of SIR-8514 at 56 and 112 g AI[active ingredient]/ha adversely affected *Cyclops* spp., *Collembola*, *Chaoborus* larvae, nymphs of *Baetis* sp., notonectids and corixids, and larvae of *Coleoptera* in experimental ponds. Diflubenzuron at 28 and 56 g AI/ha reduced *Cyclops* spp., *Collembola*, *Chaoborus* sp. and *Baetis* sp. in these ponds, but *Cyclops* spp. and *Coleoptera* showed more sensitivity to SIR-8514. EC of MV-678 at 56 and 112 g AI/ha proved the least harmful to invertebrates. In sewage pond, SIR-8514 (WP) at 70 g AI/ha adversely affected *Cyclops* spp. and *Hyaella azteca*. *Cypridopsis* sp. and *Oligochaeta* were not affected. EC of MV-678 at 0.22 kg AI/ha had no significant ($P > 0.05$) adverse effects on *Diaphanosoma brachyurum*, *Bosmina coregoni*, *Ceriodaphnia* spp., *Diaptomus* spp., *Hydrachnellae*, *Hirudinea* and *Oligochaeta* in the natural pond.

Descriptors/Keywords: CYCLOPS-SPP, COLLEMBOLA, CHAOBORUS BAETIS-SP, COLEOPTERA, HYALELLA-AZTECA, CYPRIDOPSIS-SP, OLIGOCHAETA, DIAPHANOSOMA-BRACHYURUM, BOSMINA-COREGONI, CERIODAPHNIA-SP, DIAPTOMUS-SPP, HYDRACHNELLAE, HIRUDINEA, CHIRONOMID, NOTONECTID, CORIXID, DIFLUBENZURON, MV-678, 2 METHOXY-9-4-ISOPROPYLPHENYL-2 6-DIMETHYL NONANE, BAY-SIR-8514, 1-4 TRI FLUOROMETHOXYPHENYL-3-2-CHLOROBENZOYL UREA, ENVIRONMENTAL TOXICITY, SEWAGE, WATER POLLUTION, INSECTICIDE

Record - 27

EXPERIMENTAL INSECT GROWTH REGULATORS AGAINST SOME NUISANCE CHIRONOMID MIDGES OF CENTRAL FLORIDA USA

ALIA; LORD J

J ECON ENTOMOL 73 (2). 1980. 243-249.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

In the laboratory, 3 IGR diflubenzuron, Bay SIR-8514 [1-(4-trifluoromethoxyphenyl)-3-(2-chlorobenzoyl)-urea] and Stauffer MV-678 [2-methoxy-9-(4-isopropylphenyl)-2,6-dimethylnonane], and JHA Stauffer R-20458 [1-(4'-ethylphenoxy)-6,7-epoxy-3,7-dimethyl-2-octene] were bioassayed against field-collected 4th instars of *Chironomus decorus* Johannsen and *Glyptotendipes paripes* Edwards. A 25% WP [wetable powder] and a 0.5% G [granular] of SIR-8514, a 25% WP of diflubenzuron, and an EC[emulsifiable concentrate] of MV-678 were evaluated against natural populations of *C. decorus*, *Goeldichironomus holoprasinus* (Goeldi) and *Tanytarsus* spp. in experimental ponds. The WP of SIR-8514 also was applied against the former 2 spp. in a sewage polishing pond. Pre- and post-treatment benthic larval populations and adult emergence were assessed. Diflubenzuron and SIR-8514 caused 90% mortality of *C. decorus* and *Glyptotendipes paripes* at 4-22 ppb in the laboratory, while LC90 of MV-678 for the 2 spp. ranged 50-69 ppb. R-20458 was the least active; LC90 = 0.24-0.7

ppm. In experimental ponds, WP and G of SIR-8514 at 56 and 112 g AI[active ingredient]/ha affected *Tanytarsus* spp. and *Goeldichironomus holoprasinus* more than *C. decorus*, giving an excellent overall control of these midges for .apprx. 3 wk. Diflubenzuron at 28 and 56 g AI/ha was slightly more effective than SIR-8514 and far more than MV-678 applied at comparable rates. MV-678 gave a maximum 30% control of total midges at 56 g AI/ha and 70% at 112 g AI/ha. MV-678 applied at rates > 0.12 kg AI/ha may produce better results. In the sewage pond, SIR-8514 at 70 g AI/ha completely suppressed midge emergence for at least 10 days after treatment. The 3 IGR offer a good potential for midge control.

Descriptors/Keywords: DIFLUBENZURON, BAY SIR-8514 1-4 TRI
FLUOROMETHOXYPHENYL-3-2-CHLOROBENZOYL UREA, STAUFFER MV-678 2
METHOXY-9-4-ISOPROPYLPHENYL-2-6-DIMETHYL NONANE, JHA STAUFFER R-20458 1-4'
HYLPHENOXY-6 7-EPOXY-3 7-DIMETHYL-2 OCTENE, GLYPTOTENDIPES-PARIPES,
IRONOMUS-DECORUS, GOELDICHIRONOMUS-HOLOPRASINUS, TANYTARSUS-SPP,
SEWAGE POND

Record - 28

ALI, A., AND M. S. MULLA. 1978. IMPACT OF THE INSECT GROWTH REGULATOR DIFLUBENZURON ON INVERTEBRATES IN A RESIDENTIAL-RECREATIONAL LAKE. (AL) ARCH. ENVIRON. CONTAM. TOXICOL. 7:483-491.

Record - 29

EFFECTS OF CHIRONOMID LARVICIDES AND DIFLUBENZURON ON NONTARGET INVERTEBRATES IN RESIDENTIAL RECREATIONAL LAKES

ALI A; MULLA MS

ENVIRON ENTOMOL 7 (1). 1978 21-27.

Full Journal Title: Environmental Entomology

Language: ENGLISH

ABSTRACT

Effects of granular formulations of chlorpyrifos, temephos, and diflubenzuron on nontarget invertebrates in 2 residential-recreational lakes [North and South Silver Lakes, California, USA] were studied during June, 1976-Jan., 1977. Chlorpyrifos at 0.22 kg (.0074 ppm) AI[active ingredient]/ha in partial areas (fingers) of one lake, and at 0.14 kg (.003 ppm) AI/ha in the other entire lake was evaluated. Temephos at 0.28 kg (.0092 ppm) AI/ha in the fingers, and at 0.17 kg (.0042 ppm) AI/ha in main areas of the same lake was tested. Diflubenzuron at 0.11 kg (.0037 ppm) and at 0.22 kg (.0074 ppm) AI/ha was applied to the fingers only. All 3 chemicals reduced populations of *Daphnia pulex* Leydig and *D. galeata* Sars from the fingers but they recovered within 1-3 wk. *Bosmina longirostris* (O. F. Muller) was susceptible to temephos and chlorpyrifos but tolerated diflubenzuron. *Cyclops* sp. was affected by temephos only. *Diaptomus* spp. were affected by diflubenzuron, slightly at the lower and severely at the higher rate, recovering within 2 wk. *Cyprinotus* sp., tolerant to temephos, was reduced by chlorpyrifos, 60-90% in the fingers, and up to 80% in the main lake, recovering in 1-4 wk. *Cyprinotus* sp. also was affected by diflubenzuron at 0.22 kg AI/ha. *Hyalella azteca* (Saussure), tolerant to temephos, was markedly reduced by chlorpyrifos as well as diflubenzuron for several wk. *Oligochaetes* (mostly Naididae) were not affected by any treatment employed during this study. The impact on nontarget organisms was much more severe and longer lasting when most or the entire habitat was treated as compared to partial treatments in semi-isolated fingers.

Descriptors/Keywords: DAPHNIA-PULEX, DAPHNIA-GALEATA, BOSMINA-LONGIROSTRIS, CYCLOPS-SP, DIAPTOMUS-SPP, CYPRINOTUS-SP, HYALELLA-AZTECA, OLIGOCHAETES, CHLORPYRIFOS, TEMEPHOS, CONCENTRATION, POPULATION TOLERANCE, RECOVERY, NORTH AND SOUTH SILVER LAKES CALIFORNIA, USA

Record - 30

PESTIFEROUS MIDGES AND THEIR CONTROL IN A SHALLOW RESIDENTIAL
RECREATIONAL LAKE IN SOUTHERN CALIFORNIA USA

ALIA; MULLA M; PFUNTNER A R; LUNA L L

MOSQ NEWS 38 (4). 1978. 528-535.

Full Journal Title: Mosquito News

Language: ENGLISH

ABSTRACT

The chironomid fauna of a shallow recreational lake was studied from April 1977-April 1978. Benthic larval densities were assessed weekly or biweekly by collecting Ekman dredge (15 times, 15 cm) samples; prevalence of adults was studied from their weekly accumulations in New Jersey light traps. Eleven spp. of midges were collected; *Tanytarsus* spp., *Chironomus decorus* (Johannsen) and *Procladius freemani* Sublette were quantitatively important. Larvae of *Tanytarsus* spp. were dominant prevailing at 100-2500/0.09 m² (= 1 ft²) and were highest in the spring and summer months when as many as 50,000 adults/trap/wk were collected. The seasonal quantitative composition of adult *Tanytarsus* spp. and *Chironomus* spp. generally correlated with their prevailing larval numbers, but *Procladius* spp. did not follow this pattern. Two applications of the insect growth regulator diflubenzuron (25% WP [wetttable powder]) at 0.012 ppm during April-Aug. 1977 gave excellent control of the midges for 2-3 wk after each treatment. In laboratory studies, chlorpyrifos was highly toxic to *Tanytarsus* spp. and *C. decorus*, was relatively less toxic to *P. freemani*. Temephos and fenthion were very active against *Tanytarsus* spp., but temephos was ineffective against *P. freemani*. Fenthion showed poor activity against *C. decorus* and *P. freemani*; malathion also was only slightly toxic to *P. freemani*. Some new synthetic pyrethroids, exceptionally toxic to *Tanytarsus* spp. (LC₉₀ values 0.023-0.058 ppb), were also highly active against *C. decorus* and *P. freemani*.

Descriptors/Keywords: TANYTARSUS-SPP, CHIRONOMUS-DECORUS, PROCLADIUS-FREEMANI, DIFLUBENZURON, CHLORPYRIFOS, TEMEPHOS, FENTHION, PYRETHROIDS, SUMMER, SPRING

Record - 31

THE INSECT GROWTH REGULATOR DIFLUBENZURON AND ORGANO PHOSPHORUS
INSECTICIDES AGAINST NUISANCE MIDGES IN MAN MADE RESIDENTIAL RECREATIONAL
LAKES

ALIA; MULLA M S

J ECON ENTOMOL 70 (5). 1977 571-577.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

In the laboratory, chlorpyrifos, temephos and phenthoate were highly active against 4th instars of *Chironomus utahensis* (Malloch); this species was tolerant to methyl parathion and fenthion. *Procladius freemani* Sublette and *P. sublettei* Roback were most susceptible to chlorpyrifos and phenthoate but were resistant to temephos. *Circotopus bicinctus* (Meigen) and *C. sylvestris* (F.) were most susceptible to phenthoate and least to methyl parathion. In the field, chlorpyrifos at 0.22 kg AI[active ingredient]/ha in 3 m deep lake fingers controlled *C. utahensis* (6-7 wk), and *P. freemani* and *P. sublettei* (beyond 8 wk). At 0.14 kg AI/ha in 4-5 m depths in the entire lake, chlorpyrifos yielded control of the 3 midge species for a comparable duration and extent to that achieved in fingers. The latter treatment also controlled *Chironomus decorus* Johannsen. Temephos, at 0.28 kg AI/ha in fingers, yielded excellent control of *C. utahensis* for 6 wk, but at 0.17 kg AI/ha in main lake areas, it provided mediocre control of *C. utahensis* and *C. decorus*. *P. freemani* and *P. sublettei* were not affected by temephos treatments. Diflubenzuron [1-(4-chlorophenyl)-3(2,6-difluorobenzoyl)-urea] at 0.11 kg AI/ha in fingers inhibited emergence of *C. utahensis*, *P. freemani* and *P. sublettei* for 3 wk, and at 0.22 kg AI/ha for 4-5 wk. The IGR [insect growth regulator] affected *C. decorus* only for 1 wk following treatments.

Descriptors/Keywords: CHIRONOMUS-UTAHENSIS, PROCLADIUS-FREEMANI, PROCLADIUS-SUBLETTEI, CIRCOTOPUS-BICINCTUS, CIRCOTOPUS-SYLVESTRIS, CHIRONOMUS-DECORUS, METHYL PARATHION, FENTHION, CHLORPYRIFOS, PHENTHOATE, TEMEPHOS, EMERGENCE, TOXICITY, CONTROL

Record - 32

ALIRZAEV, G. U. 1986. PRACTICAL TRIALS OF DIMILIN IN CONTROLLING MOSQUITO LARVAE IN BAKU. MED. PARAZITOL (MOSK). JAN-FEB. (1) PP. 32-35.

Record - 33

ALSAGER, D.F., AND D. A. COOK, 1975. ACUTE ORAL TOXICITY STUDIES (LD50) OF TH-6040 INSECTICIDE TO RED WINGED BLACKBIRDS AGELAIUS PHOENICEUS CBSC NO. TR-112-75, UNPUBLISHED STUDY RECEIVED FEB. 10, 1976 UNDER 6G1744, PREPARED BY CANADIAN BIO-SCIENTIFIC CONSULTANTS, LTD., AND UNIV. OF ALBERTA, DEPT. OF PHARMACOLOGY, SUBMITTED BY THOMPSON-HAYWARD CHEMICAL COL, KANSAS CITY, KS.

Record - 34

ALTENKIRCH, W. 1986. THE NUN MOTH LYMANTRIA MONACHA L. IN NORTHWEST GERMANY FROM 1977 TO 1980. ANZEIGER FUR SCHADLINGSKUNDE, PFLANZANSCHUTZ, UMWELTSCHUTZ. MAY 1986. 59(4):67-74.

Record - 35

BIOAVAILABILITY BIOLOGICAL ACTIVITY AND CHARACTERIZATION OF BOUND RESIDUES OF DIFLUBENZURON IN WHEAT

ALYMA S; DAUTERMAN W C

J ENVIRON SCI HEALTH PART B PESTIC FOOD CONTAM AGRIC WASTES 27 (2). 1992. 113-123.

Full Journal Title: Journal of Environmental Science and Health Part B

Pesticides Food Contaminants and Agricultural Wastes

Language: ENGLISH

ABSTRACT

Wheat grain was treated with radiolabeled diflubenzuron at 100 ppm and stored for various periods up to 6 months. The grain was surface washed, Soxhlet-extracted with methanol, and the residues determined. A relative constant amount of bound residues (4%), i.e., non-extractable radioactivity, was found 4 months after application and remained constant. More than 97% of the extractable radioactivity in the grain after 6 months was identified as diflubenzuron. When the bound residues were fed to rats, 47% of the administered dose was eliminated via the urine and the remainder via feces within 96 h. Diflubenzuron was the major component in the urine. Adding bound residues to housefly media resulted in a dose-dependent mortality of housefly pupae. Bound residues were biologically active, preventing the emergence of adult houseflies. Supercritical fluid extraction of the bound residues extracted 92% and 96% of the radioactivity associated with grain and feces, respectively. Only diflubenzuron was present in these extracts. The bioavailability and biological activity of bound residues of diflubenzuron have been demonstrated and the identity of the radioactivity was shown to be parent compound. Based on these findings, bound pesticide residues can no longer be ignored or overlooked in the evaluation of pesticide residues and their possible toxicological implications.

Descriptors/Keywords: RAT, HOUSEFLY, PLANT, MAMMAL, INSECT, URINE, FECES, METABOLISM, TOXICITY, INSECTICIDE, AGRICHEMICAL

Record - 36

ALZIEU, C. 1977. TOXICITE ET PERSISTANCE EN MILIEU MARIN D'UN INSECTICIDE DERIVE DES BENZOYLUREES: LE DIFLUBENZURON, REVUE DES TRAVAUX DE L'INSTITUT DES PECHEES MARITIMES, NANTES. 41(4):317-324.

Record - 37

RESISTANCE POTENTIAL OF CULEX QUINQUEFASCIATUS AGAINST THE INSECT GROWTH REGULATORS METHOPRENE AND DIFLUBENZURON

AMIN A M; WHITE G B

ENTOMOL EXP APPL 36 (1). 1984. 69-76.

Full Journal Title: Entomologia Experimentalis et Applicata

Language: ENGLISH

ABSTRACT

Bioassay procedures for the insect growth regulators [IGR] diflubenzuron (a chitin synthetase inhibitor) and methoprene (a juvenile hormone mimic) were evaluated on the mosquito *C. quinquefasciatus* Say to determine the most sensitive larval stages and the effects of varying exposure periods. Sensitivity to diflubenzuron decreased gradually during instars I and II; instars III and IV were relatively insusceptible. Sensitivity to methoprene increased with larval age. Standard test procedures were devised for diflubenzuron involving continuous exposure from the early 3rd instar and for methoprene as 6 h exposure during instar IV. Selection for 10 generations of strains from ar-es-Salaam [Tanzania] which were multiresistant to insecticides increased the LC50 to diflubenzuron by 2.8-fold and increased the LC50 to methoprene by 3.9-fold. When compared to a standard susceptible strain from Colombo [Sri Lanka] the resistance ratios of Dar-es-Salaam strains rose from 2.4 to 6.6 times for diflubenzuron and from 6.1 to 21.3 times for methoprene, with no significant effects detected on the pattern of cross-resistance. These results are discussed in relation to standardization of IGR testing and the need for integrated control programs against *C. quinquefasciatus*.

Descriptors/Keywords: INSTAR, LARVA, INSECTICIDE, INTEGRATED, CONTROL, AR-ES-ALAAM TANZANIA, COLOMBO SRI LANKA

Record - 38

DETRIMENTAL EFFECTS OF FIVE MOLT-INHIBITING INSECT GROWTH REGULATORS ON THE DEVELOPMENT AND REPRODUCTION OF THE CABBAGE APHID

BREVICORYNE BRASSICAE

AMMAR I M A; DARWISH E T E; FARAG A I; EISA A A

J APPL ENTOMOL 102 (4). 1986. 417-422.

Full Journal Title: Journal of Applied Entomology

Language: ENGLISH

ABSTRACT

In laboratory test, 5 moult-inhibiting insect growth regulators (IGRS) belonging to benzoyl-phenyl urea group were evaluated for their bioactivity against the cabbage aphid, *Brevicoryne brassicae* (L.). Exposure of 3rd instar larvae of *B. brassicae* to treated cabbage leaves with concentrations range of 0.1-100 ppm revealed that all the tested compounds (Diflubenzuron, Triflumuron, Dowco-439, IKI-7899 and XRD-473) acted more as insecticides than an IGRS where concentrations up to 10 ppm resulted in 100% accumulated mortality with the differentiation in their ability to disrupt normal progeny production. However, different antimoulting compounds at low concentrations of 0.1-5 ppm resulted in highly pronounced reduction of 70-100% in progeny production. Furthermore, all compounds evoked delayed detrimental effects on offspring survival, resulting in complete mortality at earlier stage of development, not more than the 2nd-instar larvae. In general, both XRD-473 and IKI-7899 revealed the highest potentiality against the cabbage aphids where as low as 0.1 ppm was quite enough to elicit the forementioned biological responses.

Descriptors/Keywords: DIFLUBENZURON, TRIFLUMURON, DOWCO-439, IKI-7899, XRD-473, MORTALITY

Record - 39

OVICIDAL AND LATENT EFFECTS FOLLOWING EGG TREATMENT WITH SUBLETHAL CONCENTRATIONS OF CERTAIN INSECT GROWTH REGULATORS ALONE AND IN MIXTURES AGAINST THE COLORADO POTATO BEETLE LEPTINOTARSA DECEMLINEATA

AMMAR I M A

Z ANGEW ENTOMOL 97 (5). 1984. 464-470.

Full Journal Title: Zeitschrift fuer Angewandte Entomologie

Language: ENGLISH

ABSTRACT

Commercial formulations of 3 IGR [insect growth regulator] were evaluated in the laboratory alone or/and in mixtures, in addition to the standard insecticide Phosalone (Zolone) for their ovicidal activity against different developmental stages of *L. decemlineata* eggs. Both chitin biosynthesis inhibitors and in particular diflubenzuron (Dimilin) exhibited pronounced ovicidal action much more than either the JHA [juvenile hormone and analogs], methoprene (Altosid) or the insecticide, phosalone. In all cases, the younger eggs (0-1 day old) being more susceptible than the older ones (3-4 days old). However, the JHA, methoprene when combined with either diflubenzuron or Trifluron (SIR 8514) at 1:1 ratio reduced remarkably their ovicidal activity. Regarding the latent effects following egg-treatments with sublethal concentrations (LC50) using dipping technique, it was obvious that both diflubenzuron and Trifluron produced pronounced delayed effects which were more realized by reduction in mean weight of larvae, pupae and newly emerged adults. Furthermore, fecundity in both treatments was highly reduced and was accompanied with an increased in insect sterility. In contrast, mixtures of methoprene/diflubenzuron and methoprene/Trifluron at 1:1 ratio resulted in remarkable increase in adult fecundity and egg viability.

Descriptors/Keywords: LARVA, PUPA, ADULT, WEIGHT, DIFLUBENZURON, METHOPRENE, PHOSALONE, JUVENILE HORMONE, ANALOGS, TRIFLURON, CHITIN BIOSYNTHESIS, INHIBITION, VIABILITY, FECUNDITY, STERILITY

Record - 40

EFFICACY OF DIFLUBENZURON AGAINST THE CODLING MOTH LASPEYRESIA POMONELLA LEPIDOPTERA OLETHREUTIDAE AND IMPACT ON ORCHARD MITES

ANDERSON D W; ELLIOTT R H

CAN ENTOMOL 114 (8). 1982. 733-738.

Full Journal Title: Canadian Entomologist

Language: ENGLISH

ABSTRACT

The efficacy of diflubenzuron against the codling moth, *L. pomonella* L., was compared with that of azinphos-methyl in 2 orchards. Two cover sprays were applied to coincide with peak codling moth activity which was monitored daily with pheromone-baited traps. In the Golden Delicious and mixed cultivar orchards, 187 ppm (mg active ingredient/l.) diflubenzuron provided control comparable to that of 187 ppm azinphos-methyl. In the 47 ppm diflubenzuron treatment, more fruit damage occurred particularly in the mixed cultivar orchard. In this orchard, the addition of Tween 20 to the spray mixture reduced fruit damage markedly. Diflubenzuron appeared nontoxic to the phytoseiid *Typhlodromus occidentalis* Nesbitt and stigmatid *Zetzellia mali* Ewing. In addition, cover sprays did not increase populations of European red mite, *Panonychus ulmi* (Koch) or rust mites, *Aculus* spp. The efficacy of diflubenzuron against the codling moth and its compatibility with integrated mite control suggest that the compound is a promising agent for pest management programs in apple orchards.

Descriptors/Keywords: PANONYCHUS-ULMI, TYPHLODROMUS-OCCIDENTALIS,

ZETZELLIA-MALI, ACULUS-SPP, GOLDEN DELICIOUS APPLE, ORCHARD PEST,
MANAGEMENT, PHEROMONE, BAIT, TWEEN 20

Record - 41

EVALUATION OF DIFLUBENZURON FOR CONTROL OF LEAF-ROLLERS LEPIDOPTERA
TORTRICIDAE ON APPLE

ANDERSON D W; ELLIOTT R H

J ENTOMOL SOC B C 79 (0). 1982. 20-24.

Full Journal Title: Journal of the Entomological Society of British Columbia

Language: ENGLISH

ABSTRACT

The toxicity of diflubenzuron (Dimilin) to various stages of the obliquebanded leafroller, *C. rosaceana* (Harris), was evaluated under laboratory conditions. The compound had no ovicidal effect at concentrations up to 1000 ppm but foliage treated with 100 ppm diflubenzuron plus the surfactant, Tween 20, was toxic to 1st-instar larvae. At similar concentrations, diflubenzuron reduced the longevity of adult moths but had no effect on fecundity or egg viability. In an orchard of mixed apple cultivars, diflubenzuron cover sprays applied at the pink bud stage significantly reduced fruit damage by leafrollers but failed to provide control comparable to that with azinphos-methyl.

Descriptors/Keywords: CULTIVAR, AZINPHOS-METHYL, FECUNDITY, SURFACTANT, TWEEN 20, LONGEVITY

Record - 42

ANDERSON, T. E., AND D. W. ROBERTS. 1983. COMPATIBILITY OF BEAUVERIA BASSIANA ISOLATES WITH INSECTICIDE FORMULATIONS USED IN COLORADO POTATO BEETLE CONTROL. J. OF ECON. ENTOMOL. 76(6):1437-1441

Record - 43

INFLUENCE OF THE INSECTICIDE DIFLUBENZURON DIMILIN ON THE GROWTH OF
MARINE DIATOMS AND A HARPACTICOID COPEPOD IN CULTURE

ANTIA N J; HARRISON P J; SULLIVAN D S; BISALPUTRA T

CAN J FISH AQUAT SCI 42 (7). 1985. 1272-1277.

Full Journal Title: Canadian Journal of Fisheries and Aquatic Sciences

Language: ENGLISH

ABSTRACT

Diflubenzuron (Dimilin) was tested, in the concentration range 0.1-5000 .mu.g .cntdot. l-1, for possible injurious effects on the growth and photosynthesis of 3 chitin-producing (*Thalassiosira weissflogii*, *T. nordenskioldii*, *Cyclotella cryptica*) and 1 nonchitinous (*Skeletonema costatum*) diatoms. The effects of the pesticide were also examined on adult survival and juvenile development of the harpacticoid copepod *Tigriopus californicus*. While the development of the copepod was hindered at concentrations of the order of 1-10 .mu.g .cntdot. l-1, the diatoms were barely affected by Dimilin even at the highest concentration tested (5 mg .cntdot. l-1). Dimilin acts specifically on insects and crustaceans as a larvicide by interfering with chitin deposition into cuticles during juvenile development through ecdysis. The lack of effect from Dimilin on the chitin-producing diatoms suggested that the insecticide may not inhibit chitin biosynthesis per se as was previously believed, but that it presumably deregulates one or more of the larval postsynthetic processes responsible for chitin integration into cuticles.

Descriptors/Keywords: THALASSIOSIRA-WEISSFLOGII, THALASSIOSIRA-NORDENSKIOLDII, CYCLOTELLA-CRYPTICA, SKELETONEMA-COSTATUM, TIGRIOPUS-CALIFORNICUS, PHOTOSYNTHESIS, CHITIN, PRODUCTION, JUVENILE, DEVELOPMENT, LARVICIDE, CUTICLE

Record - 44

ANONYMOUS. 1986. PESTICIDE RESIDUES IN FOOD - 1985. 4.23 DIFLUBENZURON.; TOXICOLOGY
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Record - 45

ANONYMOUS. 1986. FLIES CAN NOW BE CONTROLLED THROUGH ANIMAL FEED IN INTENSIVE
HOUSING UNITS. AGRICULTURE INTERNATIONAL. 38(4) :126, SURREY: AGRARIA PRESS.

Record - 46

ANONYMOUS. 1985. NO TITLE; NEW JERSEY COALITION FOR ALTERNATIVES TO PESTICIDES (1985)
PUBLIC UNAWARE OF THE PROPOSED USE OF DIMILIN. P 6-8 PRESENTED A GYPSY MOTH SCOPING
SESSION; DEC. 5, 1985,. TRENTON, NJ.

Record - 47

ANONYMOUS. 1985. GYPSY MOTH SUPPRESSION AND ERADICATION PROJECTS: FINAL ADDENDUM
TO THE FINAL ENVIRONMENTAL IMPACT STATEMENT AS SUPPLEMENTED- 1985. REPORT USDA,
FOREST SERVICE, BROOMALL, USA.

Record - 48

ANONYMOUS. 1982. PESTICIDE RESIDUES IN FOOD; EVALUATIONS 1981. FAO PLANT PRODUCTION
AND PROTECTION PAPER NO. 42.

Record - 49

ANONYMOUS. 1981. THE RESULTS OF TESTS ON THE AMOUNT OF DIFLUBENZURON RESIDUES
REMAINING IN OR ON MUSHROOMS INCLUDING A DESCRIPTION OF THE ANALYTICAL METHOD
USED. COMPILATION; UNPUBLISHED STUDY RECEIVED JULY 28, 1982, UNDER PP #2E2731.

Record - 50

ANONYMOUS. 1978. SUMMARY OF RESIDUES IN CROPS AND ANIMAL TISSUES RESULTING FROM
THE USE OF DIMILIN (CONTAINS A PARAGRAPH ON MOSQUITOES AND FISH). REPORT THOMPSON-
HAYWARD CHEM. CO., RELATING TO JAN. 31 EPA SUBMISSION.

Record - 51

ANONYMOUS. 1978. EVALUATION OF DIMILIN WP25 FOR CONTROL OF DOUGLAS FIR TUSSOCK
MOTH, AND EFFECT ON NON-TARGET SPECIES. REPORT THOMPSON-HAYWARD CHEMICAL
COMPANY NO. C4695.

Record - 52

ANONYMOUS. 1977. INTERREGIONAL RESEARCH PROJECT NO. 4. THE RESULTS OF TESTS ON THE
AMOUNT OF DIFLUBENZURON RESIDUES REMAINING IN OR ON PASTURE GRASS INCLUDING A
DESCRIPTION OF THE ANALYTICAL METHOD USED. COMPILATION. UNPUBLISHED STUDY
RECEIVED AUG. 2, 1982 UNDER 2E2738.

Record - 53

EFFECTS OF DIFLUBENZURON ON CHAOBORUS ASTICTOPUS AND NONTARGET ORGANISMS AND PERSISTENCE OF DIFLUBENZURON IN LENTIC HABITATS

APPERSON C S; SCHAEFER C H; COLWELL A E; WERNER G H; ANDERSON N L; DUPRAS E F JR; LONGANECKER D R

J ECON ENTOMOL 71 (3). 1978 521-527.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Diflubenzuron [1-(4-chlorophenyl)-3-(2,6-difluorobenzoyl)-urea] applied to 3 farm ponds at rates of 10, 5 and 2.5 ppb, and a lake at 5 ppb, inhibited emergence of adult *C. astictopus* Dyar and Shannon 2-7 days following the treatments by 95-100%. Emergence reoccurred in some ponds 4.5-6 wk after treatment. Larval populations in the ponds declined by 98, 88 and 44% of pretreatment at 10, 5 and 2.5 ppb, respectively, and recovered to 30, 87 and 131% of pretreatment numbers, respectively. In the control pond, larvae declined by 53% during the same period but increased to 314% of initial numbers. In the lake, larvae decreased by 99% of the pretreatment level 3 wk posttreatment and remained at low levels. Suppression of crustacean zooplankton occurred at all treatment rates. Cladocerans were more susceptible than copepods and required longer recovery periods. Pond and lake rotifer and algal populations were not altered by the treatments. Bluegill sunfish, *Lepomis macrochirus* Rafinesque, collected from the lake fed predominantly on cladocerans and copepods but switched to chironomid midges and terrestrial insects after the treatment. Fish growth was not altered by the treatment. Residues in ponds treated at 10, 5 and 2.5 ppb averaged 9.8, 4.6 and 1.9 ppb, respectively, shortly after the applications, and declined steadily averaging 0.2, 0.3 and 0.5 ppb, respectively, 2 wk later. diflubenzuron residues in the lake averaged 3.3 ppb following treatment, and after 35 days, averaged 0.4 ppb. No residues were found in lake sediment. Residues in white crappie, *Pomoxis annularis* Rafinesque, varied from 355.1-62.2 ppb at 4 and 21 days, respectively, following treatment. Fish residues did not persist at high levels and by 14 days post-treatment, they had begun to decline rapidly.

Descriptors/Keywords: LEPOMIS-MACROCHIRUS, POMOXIS-ANNULARIS, CLADOCERANS, COPEPODS, ROTIFERS, ALGAE, CHIRONOMIDS, TERRESTRIAL INSECTS, INSECT GROWTH REGULATOR, RESIDUES

Record - 54

APPERSON, C.S. 1976. EVALUATION OF DIMILIN 25W IN BLUE GREEN ALGAE (NON-TARGET EFFECTS). REPORT THOMPSON-HAYWARD CHEMICAL COMPANY NO. C3846.

Record - 55

THE VITAMIN B-1 STATUS AMONG EGYPTIANS OCCUPATIONALLY EXPOSED TO PESTICIDES

ARAFAH A; ELTOHAMY M; EZZILARAB A; HUSSEIN L

INT J VITAM NUTR RES 58 (3). 1988. 351.

Full Journal Title: International Journal for Vitamin and Nutrition Research

Language: ENGLISH

Descriptors/Keywords: CARBAMATE, DIFLUBENZURON, MALNUTRITION

Record - 56

CONTROL OF PRAYS OLEAE

ARAMBOURG Y

CAVALLORO, R. AND A. CROVETTI (ED.). INTEGRATED PEST CONTROL IN OLIVE-GROVES; CEC (COMMISSION OF THE EUROPEAN COMMUNITIES)/FAO (FOOD AND AGRICULTURE ORGANIZATION)/IOBC (INTERNATIONAL ORGANIZATION FOR

BIOLOGICAL CONTROL) INTERNATIONAL JOINT MEETING, PISA, ITALY, APR. 3-6, 1984. XIII+512P. A. A. BALKEMA: ROTTERDAM, NETHERLANDS; BOSTON, MASS., USA (DIST. IN USA AND CANADA BY A. A. BALKEMA PUBLISHERS: ACCORD, MASS., USA). ISBN 90-6191-609-7. 0 (0). 1985). 195-198.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: BACILLUS-THURINGIENSIS, OLIVE, PARASITOID, INSECTICIDE, MICROBIAL, CONTROL, DIFLUBENZURON, INSECT GROWTH REGULATOR, PHEROMONE

Record - 57

DIFLUBENZURON AND BAY-SIR-8514 IN MUSHROOMS GROWN IN TREATED COMPOST OR CASING

ARGAUER R J; CANTELO W W

J ECON ENTOMOL 77 (2). 1984. 462-464.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Chemical methodology based on liquid chromatography was developed to measure trace amounts of 2 insect chitin synthesis inhibitors in mushrooms that were effective for control of a sciarid fly, *Lycoriella mali*. No residues (< 0.05 ppm) of diflubenzuron were found in mushrooms grown in treated compost. Trace amounts of diflubenzuron and BAY SIR 8514 (2-chloro-N-[[[4-(trifluoromethoxy)phenyl]-amino]carbonyl]) were found in several samples of mushrooms grown in treated casing and were attributed to splash-up of the treated casing onto the mushroom during watering.

Descriptors/Keywords: LYCORIELLA-MALI, INSECTICIDE

Record - 58

STABILITY OF 3 UREIDE INSECT CHITIN SYNTHESIS INHIBITORS IN MUSHROOM COMPOST DETERMINED BY CHEMICAL AND BIOASSAY TECHNIQUES

ARGAUER R J; CANTELO W W

J ECON ENTOMOL 73 (5). 1980 . 671-674.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

In tests conducted to determine the stability of selected insecticides incompost [horse manure and straw] used to grow mushrooms, 3 ureide insecticides, diflubenzuron (N-[[[4-chlorophenyl]amino]carbonyl]-2,6-difluorobenzamide), BAY SIR 8514 (2-chloro-N-[[[4-trifluoromethoxyphenyl]amino]carbonyl]benzamide), and Lilly 7063 (N-[[[5-(4-bromophenyl)-6-methyl-2-pyrazinyl]amino]carbonyl]-2-chlorobenzamide), were much more stable than the 3 phosphorus-containing insecticides tested, diazinon, ethoprop and chlorpyrifos, although chlorpyrifos provided up to 80% fly control for 6 wk. Residues were assayed by means of both an established bioassay with a sciarid fly, *Lycoriella mali* (Fitch) and with a newly developed chemical method based on high performance liquid chromatography.

Descriptors/Keywords: LYCORIELLA-MALI, HORSE MANURE, STRAW, DIFLUBENZURON, N-4 CHLOROPHENYLAMINOCARBONYL-2 6-DIFLUORO BENZAMIDE, BAY-SIR-8514 2 CHLORO-N-4-TRIFLOROMETHOXYPHENYLAMINOCARBONYL BENZAMIDE, LILLY 7063 N-5-4 BROMOPHENYL-6-METHYL-2-PYRAZINYLAMINOCARBONYL-2-CHLORO BENZAMIDE, DIAZINON, ETHOPROP, CHLORPYRIFOS, HIGH PERFORMANCE LIQUID CHROMATOGRAPHY

Record - 59

ARSHAD, A., AND B.H. STANLEY. 1981. EFFECT OF A NEW INSECT GROWTH REGULATOR, UC-62644, ON TARGET CHIRONOMIDAE AND SOME NON-TARGET AQUATIC INVERTEBRATES. MOSQUITO NEWS 41 (4): 692-701.

Record - 60

INHERENT TOXICITY OF THE ACYLUREAS HEXAFLUMURON AND CHLORFLUAZURON AGAINST LARVAE OF THE COTTON BOLLWORM HELICOVERPA ARMIGERA HUEBNER LEPIDOPTERA NOCTUIDAE

ASCHER K R S; ELIYAHU M; NEMNY N E

Z PFLANZENKR PFLANZENSCHUTZ 98 (4). 1991. 391-397.

Full Journal Title: Zeitschrift fuer Pflanzenkrankheiten und Pflanzenschutz

Language: ENGLISH

ABSTRACT

The effect of several acylureas applied topically to larvae of *Helicoverpa armigera* was studied. Hexaflumuron was the most active, followed by chlorfluazuron; triflumuron had some effect, whereas teflubenzuron and diflubenzuron were inactive. The rearing method is described in detail.

Descriptors/Keywords: TRIFLUMURON, TEFLUBENZURON, DIFLUBENZURON

Record - 61

THE EFFECT OF BENZOYLPHENYL UREA MOLTING INHIBITORS ON LARVAE AND EGGS OF THE EUROPEAN CORN BORER OSTRINIA NUBILALIS HBN. LEPIDOPTERA PYRALIDAE

ASCHER K R S; MELAMED-MADJAR V; NEMMY N E; TAM S

1ST INTERNATIONAL SYMPOSIUM ON MAIZE ARTHROPODS, GODOLLO, HUNGARY, AUGUST 1987. ACTA PHYTOPATHOL ENTOMOL HUNG 24 (1-2). 1989. 25-30.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: DIMILIN, ALSYSTIN, CME 134 IKI-7899 XRD-473, MORTALITY

Record - 62

THE EFFECT OF BENZOYLPHENYLUREA MOLTING INHIBITORS ON LARVAE AND EGGS OF THE EUROPEAN CORN BORER OSTRINIA NUBILALIS HB. LEPIDOPTERA PYRALIDAE

ASCHER K R S; MELAMED-MADJAR V; NEMNY N E; TAM S

Z PFLANZENKR PFLANZENSCHUTZ 94 (6). 1987. 584-589.

Full Journal Title: Zeitschrift fuer Pflanzenkrankheiten und Pflanzenschutz

Language: ENGLISH

ABSTRACT

The benzoylphenylurea molting inhibitors diflubenzuron (Dimilin), triflumuron (Alsystin), teflubenzuron (CME 134), chlorfluazuron (IKI-7899) and XRD-473 were assayed as to their activity against larvae and eggs of the European corn borer, *Ostrinia nubilalis*. Corn seedlings were sprayed and infested with 4 mg *O. nubilalis* larvae. After 3 days, the larvae were transferred to an artificial diet. The number of dead and injured larvae and, ultimately, the percent pupation and percent adult emergence, were recorded. More than 90% kill until emergence was obtained by teflubenzuron (S.C.) at a concentration of 0.1 mg a.i./l; XRD-473 (E.C.), 5 mg/l; triflumuron (W.P.), 50 mg/l; diflubenzuron (W.P.), 250 mg/l; and chlorfluazuron (W.P.), 500 mg/l. In the ovicidal tests, only diflubenzuron (liquid formulation) and triflumuron (E.C.) were highly active, whereas chlorfluazuron (E.C.), XRD-473 (E.C.) and teflubenzuron (S.C.) were inactive at 100 mg a.i./l.

Descriptors/Keywords: DIFLUBENZURON, TRIFLUMURON, TEFLUBENZURON,

CHLORFLUAZURON, XRD-473, LARVICIDAL, OVICIDAL

Record - 63

EGG-STERILIZING EFFECT OF BENZOYLPHENYLUREAS VIA THE ADULT STAGE OF THE
NITIDULID BEETLE CARPOPHILUS HEMIPTERUS

ASCHER K R S; NEMNY N E; BLUMBERG D; GOLDENBERG S

PHYTOPARASITICA 14 (3). 1986. 187-192.

Full Journal Title: Phytoparasitica

Language: ENGLISH

ABSTRACT

The effect of a 24-h exposure of adults of *Carpophilus hemipterus* to artificial diets treated on the surface with different concentrations of benzoylphenylureas, on the hatchability of eggs laid during the subsequent 14 days, was investigated. The order of persistence of sterilization at 5 ppm was chlorfluazuron (IK1-7899), 12 days > XRD-473, 10 days > diflubenzuron, 6 days > teflubenzuron (CME 134), 4 days. Three of the substances (chlorfluazuron, diflubenzuron and teflubenzuron) had no direct ovicidal effect when *C. hemipterus* eggs were dipped in 1000 ppm dilutions, but the larvae that hatched from the treatments died within 2 days.

Descriptors/Keywords: CHLORFLUAZURON, XRD-473, DIFLUBENZURON, TEFLUBENZURON

Record - 64

THE EFFECT OF CME-134 ON SPODOPTERA LITTORALIS EGGS AND LARVAE

ASCHER K R S; NEMNY N E

PHYTOPARASITICA 12 (1). 1984. 13-28.

Full Journal Title: Phytoparasitica

Language: ENGLISH

ABSTRACT

CME 134, a new benzoylphenyl urea chitin synthesis inhibitor, was less active than diflubenzuron and BAY SIR 8514, when tested against *S. littoralis* eggs by a dipping method. Against *S. littoralis* larvae the compound was tested by feeding treated alfalfa, topical application and contact with crystalline residues on glass, followed by observation until the adult stage. With both 200-250 and 360-440-mg larvae 100% mortality was obtained by one-day feeding of alfalfa treated with 0.15 ppm a.i. [active ingredient]. Topical application to 100- and 200-mg larvae showed CME 134 to be about 5 and 9 times more active than BAY SIR 8514 and diflubenzuron, respectively. These differences were even much greater in the contact tests. Cotton field plots were sprayed with either CME 134 or diflubenzuron formulations, leaves were collected at different intervals and fed for one day to *S. littoralis* larvae in the laboratory. 0.0009% a.i. CME 134 residues gave complete kill of 30-50 mg larvae after 5 and 20 days, and 86% kill after 28 days of aging. With 0.003 and 0.009% a.i., complete kill was obtained in 200-250-mg larvae until 50 days after spraying.

Descriptors/Keywords: ALFALFA, COTTON, DIFLUBENZURON, BAY-SIR-8514, CHITIN SYNTHESIS INHIBITOR, BENZOYLPHENYL UREA, INSECT GROWTH REGULATOR

Record - 65

REARING THE HONEYDEW MOTH CRYPTOBLABES GNIDIELLA AND THE EFFECT OF
DIFLUBENZURON ON ITS EGGS

ASCHER K R S; ELIYAHU M; GUREVITZ E; RENNEH S

PHYTOPARASITICA 11 (3-4). 1983. 195-198.

Full Journal Title: Phytoparasitica

Language: ENGLISH

Descriptors/Keywords: FRUIT, PEST, OVICIDE, FORMULATION, TEMPERATURE, DIP, ASSAY

Record - 66

THE TOXICITY OF SOME NOVEL PESTICIDES SYNTHETIC PYRETHROIDS AND BENZOYL PHENYL UREA CHITIN SYNTHESIS INHIBITORS FOR EGGS OF SPODOPTERA LITTORALIS

ASCHER K R S; ELIYAHU M; NEMNY N E; ISHAAYA I

Z ANGEW ENTOMOL 94 (5). 1982. 504-509.

Full Journal Title: Zeitschrift fuer Angewandte Entomologie

Language: ENGLISH

ABSTRACT

A series of pyrethroids was investigated for toxic effect against 0- to 1-day-old *S. littoralis* eggs and their LC50 were determined. Among the pyrethroids Decis was the most active compound, followed by Dowco 417 and Cymbush, and finally Pydrin and Ambush; Cybolt was much less toxic. The benzoyl phenylurea chitin synthesis inhibitors Dimilin and PH 60-44 were more effective a 5 ppm than all the pyrethroids tested, except Decis and Cymbush. Decis was more toxic than Dimilin and PH 60-44 even at 1 ppm. Some further benzoyl phenylureas, such as PH 60-45, Dowco 439 and Dowco 401, had either only low activity or were inactive against *S. littoralis* eggs.

Descriptors/Keywords: DECI, DOWCO 417, CYMBUSH, PYDRIN, AMBUSH, CYBOLT, DIMILIN, PH-60-44, PH-60-45, DOWCO 439, DOWCO 401, LC-50

Record -67

THE RESIDUAL CONTACT TOXICITY OF BAY SIR-8514 TO SPODOPTERA LITTORALIS LARVAE

ASCHER K R S; ELIYAHU M

PHYTOPARASITICA 9 (2). 1981. 133-138.

Full Journal Title: Phytoparasitica

Language: ENGLISH

ABSTRACT

The contact effect of residues on glass of the chitin synthesis inhibitor BAY SIR 8514 against *S. littoralis* (Boisduval) larvae was investigated and probit-log dosage curves were established. The ED50 for cumulative mortality up to the adult stage was 0.0017 g/m² for 100-mg and 0.004 g/m² for 200-mg larvae. The toxicity of BAY SIR 8514 through this route of administration was higher than that of diflubenzuron in previous work.

Descriptors/Keywords: DIFLUBENZURON, CHITIN SYNTHESIS, DOSAGE CURVE, ED-50, MORTALITY

Record - 68

DIFLUBENZURON DELAYS THE ONSET OF MORTALITY CAUSED BY SODIUM FLUOSILICATE AND FLUORO ACETAMIDE IN THE HOUSE FLY

ASCHER K R S; NEMNY N E

PHYTOPARASITICA 8 (3). 1980. 217-220.

Full Journal Title: Phytoparasitica

Language: ENGLISH

ABSTRACT

The toxic effect of sucrose-containing Na₂ SiF₆ solutions fed to houseflies is delayed when diflubenzuron (DFB) is added to the solutions. A similar effect is exerted by DFB on fluoroacetamide toxicity.

Descriptors/Keywords: SUCROSE, TOXICITY

Record - 69

ASCHER, K. R. S., N. E. NEMNY, AND I. ISHAAYA. 1980. THE TOXIC EFFECT OF DIFLUBENZURON ON SPODOPTERA LITTORALIS EGGS AND ON THEIR RESPIRATION. PESTIC. SCI. 11 (1) : 90-94.

Record - 70

THE EFFECT OF BAY-SIR-8514 ON SPODOPTERA LITTORALIS EGGS AND LARVAE

ASCHER K R S; NEMNY N E; ELIYAHU M; ISHAAYA I

PHYTOPARASITICA 7 (3). 1979. 177-184.

Full Journal Title: Phytoparasitica

Language: ENGLISH

ABSTRACT

The chitin biosynthesis inhibitor diflubenzuron and its analog BAY SIR 8514 are equitoxic for eggs of *S. littoralis*. BAY SIR 8514 residues on alfalfa fed to *Spodoptera* larvae were more toxic than diflubenzuron residues, whereas BAY SIR 8514 topically applied to these larvae was consistently twice as toxic as diflubenzuron, according to different criteria.

Descriptors/Keywords: ALFALFA, RESIDUE, CHITIN BIOSYNTHESIS, DIFLUBENZURON

Record - 71

THE EFFECT OF DIFLUBENZURON ON EGGS OF THE GRAPEVINE MOTH LOBESIA POLYCHROSIS-BOTRANA LEPIDOPTERA TORTRICIDAE

ASCHER K R S; GUREVITZ E; ELIYAHU M

PHYTOPARASITICA 6 (1). 1978. 25-28.

Full Journal Title: Phytoparasitica

Language: ENGLISH

ABSTRACT

The activity of diflubenzuron against eggs of *L. botrana* was assayed with a dipping procedure, at 22.degree. and 27.degree. C. The compound was much more active at 27.degree. C (LC50 = 0.0072%) than at 22.degree. C (LC50 = 0.795%).

Descriptors/Keywords: INSECTICIDE, TEMPERATURE

Record - 72

THE EFFECT OF DIFLUBENZURON ON EGGS AND LARVAE OF EARIAS INSULANA

ASCHER K R S; NEMNY N E; KEHAT M; GORDON D

PHYTOPARASITICA 6 (1). 1978. 29-34.

Full Journal Title: Phytoparasitica

Language: ENGLISH

ABSTRACT

The toxicity obtained on dipping the eggs was moderate and the results were highly inconsistent. The mortality of larvae on an artificial diet into which the wettable powder had been incorporated was relatively high.

Descriptors/Keywords: TOXICITY, MORTALITY

Record - 73

ASCHER, K. R. S., AND N. E. NEMNY. 1976. TOXICITY OF THE CHITIN SYNTHESIS INHIBITORS, DIFLUBENZURON AND ITS DICHLOR-ANALOGUE, TO SPODOPTERA LITTORALIS LARVAE. PESTIC. SCI. 7(1): 1-9.

Record - 74

ASCHER, K. R. S., AND NEMNY, N. E. 1976. CONTACT ACTIVITY OF DIFLUBENZURON AGAINST SPODOPTERA LITTORALIS LARVAE. PESTIC. SCI. 7(5): 447-452.

Record - 75

ASKINS, S. E. 1975. EXPERIMENTAL USE OF DIMILIN W-25 FOR CONTROL OF MOSQUITO LARVAE. REPORT WEST PASCO COUNTY MOSQUITO CONTROL DISTRICT; FLORIDA

Record - 76

ASKINS, S. E. 1975. EVALUATION OF DIMILIN FOR THE CONTROL OF AEDES TAENIORHYNCHUS AND AEDES SOLLICITANS. REPORT THOMPSON-HAYWARD CHEMICAL COMPANY.

Record - 77

EGG HATCH INHIBITION IN THE COTTON LEAFWORM SPODOPTERA LITTORALIS WITH CERTAIN INSECT GROWTH REGULATORS AND SYNTHETIC PYRETHROIDS

ASSAL O M; RADWAN H S A; SAMY M E

Z ANGEW ENTOMOL 95 (3). 1983. 259-263.

Full Journal Title: Zeitschrift fuer Angewandte Entomologie

Language: ENGLISH

ABSTRACT

The ovicidal activity of 4 synthetic pyrethroids and 2 insect growth regulators compared with Chlorpyrifos and Methomyl were investigated by topical application against *S. littoralis* eggs of different ages. Synthetic pyrethroids exhibited highly pronounced ovicidal action much better than organophosphate and carbamate compounds used as standard. Decamethrin revealed the highest activity in this respect. The chitin biosynthesis inhibitor Diflubenzuron evoked ovicidal activity higher than both standards and its analog Trifluron (BAY SIR 8514). In all cases, as the egg-age and embryonic development was considered, the more developed eggs (2-3 days old) were less sensitive than newly developed eggs (0-1 day old).

Descriptors/Keywords: DECAMETHRIN, ORGANO PHOSPHATE, CARBAMATE, OVICIDE, DIFLUBENZURON, TRIFLURON, CHITIN

Record - 78

ATKINS, E. L., D. KELLUM, AND K. W. ATKINS. 1981. REDUCING PESTICIDE HAZARDS TO HONEY BEES: MORTALITY PREDICTION TECHNIQUES AND INTEGRATED MANAGEMENT STRATEGIES. DIVISION OF AGRICULTURAL SCIENCES. UNIV. OF CALIFORNIA. LEAFLET 2663:1.

Record - 79

ATKINS, E. L. , E. GREYWOOD-HALE, AND R. MACDONALD. 1974. EFFECT OF PESTICIDES ON APICULTURE: PROJECT NO. 1499. 1974 ANNUAL REPORT. (UNPUBLISHED STUDY RECEIVED JULY 31, 1978 UNDER 148-1259; PREPARED BY UNIV. OF CALIF.-RIVERSIDE, CITRUS RESEARCH CENTER AND AG. EXPERIMENT STATION; DEPT. OF ENTOMOLOGY., SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 80

EFFECT OF DIFLUBENZURON ON THE CUTICULAR CHITIN AND PROTEIN OF
FOURTH-INSTAR LARVAE OF THE TOBACCO HORNWORM MANDUCA SEXTA L. LEPIDOPTERA
SPHINGIDAE

AUDA M; EL SAIDY M F; JANSSENS S; DEGHEELE D

INTERNATIONAL SYMPOSIUM ON CROP PROTECTION, GENT, BELGIUM. MEDED FAC
LANDBOUWWET RIJKSUNIV GENT 54 (3 PART B). 1989. 1009-1018.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Record - 81

LABORATORY EVALUATION OF ADJUVANT INSECTICIDE MIXTURES AGAINST A
SUSCEPTIBLE AND MONOCROTOPHOS-RESISTANT STRAIN OF SPODOPTERA LITTORALIS
BOISD

AUDA M; EL SAIDY M F; DEGHEELE D

MEDED FAC LANDBOUWWET RIJKSUNIV GENT 53 (1). 1988. 195-202.

Full Journal Title: Mededelingen van de Faculteit Landbouwwetenschappen

Rijksuniversiteit Gent

Language: ENGLISH

ABSTRACT

The combined application of the adjuvants 'Atplus' 411 F, 'Atplus' 412 and 'Atplus' 413 to insecticide formulations enhanced the toxicity of the insecticide used. The most marked enhancement is obtained when adjuvants were mixed with chitin synthesis inhibitors (diflubenzuron or chlorflurazuron) and tested out on 3rd instar *Spodoptera littoralis* Boisd. larvae of a susceptible and monocrotophos-resistant strain at the two ratios of toxicity, LC25 and LC50. Adjuvants mixed with profenofos, monocrotophos and methomyl gave the highest toxicity with 'Atplus' 411 F in both strains; 'Atplus' 413 gave lower toxicity in the R-strain. Except for deltamethrin with 'Atplus' 411 F, pyrethroids do not seem to be promising in combination with adjuvants in the way they have been applicated.

Descriptors/Keywords: LARVA, ATPLUS 411F, ATPLUS 412, ATPLUS 413, DIFLUBENZURON,
CHLORFLUAZURON, PROFENOFOS, METHOMYL, DELTAMETHRIN, CHITIN SYNTHESIS

Record - 82

JOINT ACTION OF CHITIN SYNTHESIS INHIBITORS WITH PROFENOFOS MONOCROTOPHOS
OR METHOMYL ON A SUSCEPTIBLE AND RESISTANT STRAIN OF SPODOPTERA LITTORALIS
BOISD

AUDA M; DEGHEELE D

MEDED FAC LANDBOUWWET RIJKSUNIV GENT 51 (3 PART B). 1986. 1239-1244.

Full Journal Title: Mededelingen van de Faculteit Landbouwwetenschappen Rijksuniversiteit Gent

Language: ENGLISH

ABSTRACT

The joint action of chlorfluazuran or diflubenzuron with the organophosphorus compounds profenofos, monocrotophos or the carbamate compound methomyl was examined in a susceptible and a monocrotophos-resistant strain of *Spodoptera littoralis* (Boisd.). Third instar larvae were fed dipped castor bean leaves, *Ricinus communis*. Potentiation always occurred in both the susceptible and resistant strain with mixtures of the chitin synthesis inhibitors and the other insecticides used at two ratios of toxicity: 1:1 (LC25) and 1:2 (LC25:LC50). Except when monocrotophos was mixed with diflubenzuron in the S-strain, a potentiation (cotoxicity factor) level between 70 and 100 was obtained in all the LC25 ratios. While higher potentiation was observed for the R-strain in all the LC25 combinations with diflubenzuron, all LC25 combinations with chlorfluazuron yielded similar S- and R-strain potentiation values. The joint action of diflubenzuron with monocrotophos gave quite different results at LC25-

values: a cotoxicity factor of 40 in the S-strain and 100 in the R-strain.

Descriptors/Keywords: RICINUS-COMMUNIS, DIFLUBENZURON, COTOXICITY

Record - 83

JOINT ACTION OF PYRETHROIDS WITH CHITIN SYNTHESIS INHIBITORS
ORGANOPHOSPHORUS AND CARBAMATE INSECTICIDES ON A SUSCEPTIBLE AND RESISTANT
STRAIN OF SPODOPTERA LITTORALIS

AUDA M; DEGHEELE D

37TH INTERNATIONAL SYMPOSIUM ON CROP PROTECTION, GHENT, BELGIUM. MEDED
FAC LANDBOUWWET RIJSUNIV GENT 50 (2 PART B). 751-760.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: PP-321, CYPERMETHRIN, DELTAMETHRIN, CGA-112'913,
DIFLUBENZURON, METHOMYL, PROFENOFOS, MONOCROTOPHOS

Record - 84

AUDEMARD, H. 1978. CODLING MOTH CONTROL RESULTS OF THE DIFLUBENZURON TESTS. MITT
BIOL. BUNDESANST LAND - FORSTWIRTSCH BERL O DAHLEM (180) 1978 111-119.

Record - 85

AUDEMARD, H. 1977. COMPLEMENTARY TEST ON THE CODDLING MOTH LASPEYRESI
APOMONELLA L. WITH A NEW DIFLUBENZURON INSECTICIDE (IN APPLE ORCHARDS). DEF. VEG.
31 (187): 303-309. SEPT. AND OCT.

Record - 86

FURTHER STUDIES OF THE DEPOSITION AND PERSISTENCE OF BINAPACRYL
BUPIRIMATE AND DIFLUBENZURON ON APPLE FOLIAGE AND FRUIT

AUSTIN D J; CARTER K J

PESTIC SCI 17 (2). 1986. 73-78.

Full Journal Title: Pesticide Science

Language: ENGLISH

ABSTRACT

In an extension of previous work, deposits and residues of binapacryl, bupirimate and diflubenzuron on mature foliage and the peel of developing fruit of Worcester and Cox apple trees were monitored throughout the 1980 season following applications by mistblower sprayer. The three compounds were applied as commercial formulations in trials to compare integrated pest management with routine farm spray programmes. In contrast to previous results, all three compounds persisted on foliage until leaf-fall and were detected on the peel of harvested fruit. The mean residue of diflubenzuron on harvested Worcester fruit was 0.05 mg kg⁻¹ fresh weight and on harvested Cox fruit was 0.02 mg kg⁻¹ fresh weight. Binapacryl and bupirimate were present on harvested fruit of both cultivars. The unexpectedly long persistence of these chemical in 1980 remains unexplained, but may be due to climatic factors.

Descriptors/Keywords: INSECT GROWTH REGULATOR, FUNGICIDE, FRUITS, FOOD
RESIDUE

Record - 87

AUSTIN, D. J., AND K. J. HALL. 1981. A METHOD OF ANALYSIS FOR THE DETERMINATION OF BINAPACRYL, BUPIRIMATE AND DIFLUBENZURON (INSECTICIDES) ON APPLE FOLIAGE AND FRUIT, AND ITS APPLICATION TO PERSISTENCE STUDIES. PESTIC. SCI. 12(5): 495-502.

Record - 88

CHEMICAL CONTROL OF SCHIZAPHIS GRAMINUM RONDANI 1852 HOMOPTERA APHIDIDAE ON WHEAT

AVILA C J

AN SOC ENTOMOL BRAS 21 (3). 1992. 267-272.

Full Journal Title: Anais da Sociedade Entomologica do Brasil

Language: PORTUGUESE

ABSTRACT

The work was done at EMBRAPA-UEPAE de Dourados, Mato Grosso do Sul, Brazil. The efficiency of the insecticides monocrotophos (80 and 120 g a.i./ha); chlorpyrifos (95 and 125 g a.i./ha), pirimicarb (50 and 75 g a.i./ha); methamidophos (120 g a.i./ha); beta-cyfluthrin (5 g a.i./ha) and diflubenzuron (20 g a.i./ha) on the control of *S. graminum* on wheat was evaluated. The aphid population was evaluated before and at three, six and ten days after the chemical spraying. The control efficiency was determined by the Henderson and Tilton equation. The insecticides monocrotophos, chlorpyrifos, pirimicarb and methamidophos achieved control efficiencies above 92% at the three evaluation dates, regardless of the dosage. Diflubenzuron showed low control level (below 38%) and beta-cyfluthrin showed intermediate efficiency. The low level of control achieved by diflubenzuron may be important in breeding program aimed at selection of wheat cultivars resistant to *S. graminum* because it gives good control of other insect pests, mainly caterpillars, without great harm to the aphid population.

Descriptors/Keywords: MONOCROTAPHOS, CHLORPYRIFOS, PIRIMICARB, METHAMIDOPHOS, BETA CYFLUTHRIN, DIFLUBENZURON, BREEDING PROGRAM, PLANT RESISTANCE, BRAZIL

Record - 89

AXTELL, R. C., S. T. JARONSKI, AND T. L. MERRIAM. 1982. EFFICACY OF THE MOSQUITO FUNGAL PATHOGEN; LAIEDIUM GIGANTEUM. PROC. PAP. 15TH ANN. CONF. CALIFORNIA MOSQUITO AND VECTOR CONTROL ASSOC. 41-42.

Record - 90

FIELD TESTS OF INSECTICIDES AND INSECT GROWTH REGULATORS FOR THE CONTROL OF CULEX QUINQUEFASCIATUS IN ANAEROBIC ANIMAL WASTE LAGOONS

AXTELL R C; RUTZ D A; EDWARDS T D

MOSQ NEWS 40 (1). 1980. 36-42.

Full Journal Title: Mosquito News

Language: ENGLISH

ABSTRACT

Four insecticides and 2 insect growth regulators (diflubenzuron and methoprene) were applied to anaerobic swine waste lagoons for the control of the mosquito *C. quinquefasciatus* (Say). Chlorpyrifos at 0.4 lb/acre [A] (448 g/ha) or more gave excellent mosquito control for 3-5 wk. Malathion at 1.0 lb/A (1.12 kg/ha) did not give satisfactory control. Temephos at 0.5 lb/A (560 g/ha) gave control for only 3-4 days. Flit MLO [a refined petroleum oil] at 7 gal/A (65 l/ha) gave satisfactory control for 3-4 days and was not effective at lower rates. Diflubenzuron at 0.1 lb/A (112 g/ha) gave satisfactory control for 1-2 wk. Methoprene did not give satisfactory control at 0.4 lb/A (448 g/ha). A granular formulation of diflubenzuron was about equally effective as the wettable powder.

Descriptors/Keywords: SWINE, DIFLUBENZURON, METHOPRENE, MALATHION, CHLORPYRIFOS,

TEMEPHOS, PETROLEUM OIL

Record - 91

FIELD TESTS OF DIFLUBENZURON METHOPRENE FLIT MLO AND CHLORPYRIFOS FOR THE CONTROL OF AEDES TAENIORHYNCHUS LARVAE IN DIKED DREDGED SPOIL AREAS

AXTELL R C; DUKES J C; EDWARDS T D

MOSQ NEWS 39 (3). 1979. 520-527.

Full Journal Title: Mosquito News

Language: ENGLISH

ABSTRACT

Replicated field tests were conducted with 4 chemicals at various rates of application to control *A. taeniorhynchus* larvae in temporary pools of water in depressions within diked dredge spoil disposal areas. Lowest rates of application effective for complete control were: diflubenzuron (Dimilin), 0.01 lb AI [active ingredient]/acre (11 g/ha); methoprene (Altosid SR-10), 0.04 lb AI/acre (45 g/ha); Flit MLO, 4 gal/acre (15.6 l/ha). Applications of controlled release pellets of chlorpyrifos (Dursban 10CR) at the recommended rate (1 oz pellets/850 ft²/1 in. water depth) gave complete control at 2 days posttreatment.

Descriptors/Keywords: INSECTICIDE

Record - 92

SOYBEAN GLYCINE-MAX KIRBY VELVETBEAN CATERPILLAR ANTICARSIA GEMMATALIS HUBNER EVALUATION OF INSECTICIDES FOR INSECT CONTROL IN ALABAMA USA

SOYBEANS 1990

BACKMAN C B; MACK T P

THOMAS, J. H. (ED.). INSECTICIDE AND ACARICIDE TESTS, VOL. 16. 327P.

ENTOMOLOGICAL SOCIETY OF AMERICA: LANHAM, MARYLAND, USA. ILLUS. PAPER. 0 (0). 1991. 216-217.

Language: ENGLISH

Descriptors/Keywords: AMBUSH, KARATE, JAVELIN, DIMILIN, DIPEL, SCOUT, CONDOR, KRYOCIDE

Record - 93

LABORATORY EVALUATION OF THE ACTIVITY OF ACYLUREA INSECTICIDES AGAINST CODLING MOTH CYDIA POMONELLA L LEPIDOPTERA TORTRICIDAE

BADOWSKA-CZUBIK T; PALA E; NOWAKOWSKI Z

FRUIT SCI REP (SKIERNIEWICE) 18 (1). 1991. 37-44.

Full Journal Title: Fruit Science Reports (Skierniewice)

Language: ENGLISH

ABSTRACT

Toxicity of chlorfuzuron, diflubenzuron, teflubenzuron and triflumuron towards adult codling moths and their progeny were studied. All the preparations showed a significant ovicidal and transovarial activity. Triflumuron was found the most effective material.

Descriptors/Keywords: CHLORFUAZURON, DIFLUBENZURON, TEFLUBENZURON, TRIFLUMURON, OVICIDAL, TRANSOVARIAL ACTIVITY, STERILIZATION,

Record - 94

BAGGIOLINI, M. 1979. TWO NEW TYPES OF INSECTICIDES: PYRETHRINOIDS AND DIFLUBENZURON. REVUE SUISSE DE VITICULTURE, ARBORICULTURE, HORTICULTURE 11 (1): 15-16. JAN/FEB.

Record - 95

INSECT GROWTH REGULATORS I. BIOLOGICAL ACTIVITY OF SOME IGR'S AGAINST THE SUSCEPTIBLE AND RESISTANT STRAINS OF CULEX PIPPIENS LARVAE II. PATTERN OF CROSS RESISTANCE TO IGR'S IN CARBARYL-RESISTANT STRAIN

BAKR R F A; ABO GABAL N M; HUSSEIN M A

J EGYPT SOC PARASITOL 19 (2). 1989. 589-598.

Full Journal Title: Journal of the Egyptian Society of Parasitology

Language: ENGLISH

ABSTRACT

The biological activity and cross-resistance of some IGR's, dimilin, BAY SIR 8514 and chlorofluzuron against susceptible and carbaryl-resistant strains of *Culex pipiens* were determined. The results indicated that these compounds are highly effective against the larvae of *C. pipiens* but more potent larvicides against the susceptible larvae than against the resistant ones. The pattern of cross-resistance to the used IGR's in the carbaryl-resistant strain were obtained. The data revealed no three IGR's as larvicides against the susceptible and resistant *Culex pipiens*. The pattern of cross resistance to other potent IGR's was also studied.

Descriptors/Keywords: DIMILIN, BAY-SIR-8514, CHLORFLUAZURON, LARVICIDE

Record - 96

BALDI, M., A. BOVOLENTA, L. PENAZZI, AND L. ZANONI. 1981. DECAY OF SOME PESTICIDES ON FRUIT TREATED WITH DIMILIN, ORTHENE AND LANNATE. INDUSTRIE ALIMENTARI. 20 (2) :87-88.

Record - 97

BANCROFT, H. R. 1976. MINI IMPACT STUDY WITH DIMILIN IN MOSQUITO HABITATS. REPORT MEMPHIS STATE UNIVERSITY. MEMPHIS, TENNESSEE.

Record - 98

BANSBERG, L. 1983. DETERMINATION OF THE ACUTE TOXICITY OF 2,6-DICHLOROBENZAMIDE (BAM) TO DAPHNIA MAGNA. REPORT DUPHAR B.V. 56635/24/1983 .

Record - 99

BANSBERG, L. 1982. DETERMINATION OF THE ACUTE TOXICITY OF PH 60-44 TO DAPHNIA MAGNA. REPORT DUPHAR B.V. NO. 56635/22/1982.

Record - 100

BARKER, R. J. 1978. LETTER SENT TO C.A. SHADBOLT DATED FEB. 13TH, 1978 CONCERNING EFFECTS OF DIMILIN ON HONEY BEES. U. S. AG. RESEARCH SVC. WESTERN REGION, BEE RESEARCH LAB., UNPUBLISHED STUDY.

Record - 101

EFFECTS OF DIFLUBENZURON WETTABLE POWDER ON CAGED HONEY BEE COLONIES
BARKER R J; WALLER G D

ENVIRON ENTOMOL 7 (4). 1978 534-535.

Full Journal Title: Environmental Entomology

Language: ENGLISH

ABSTRACT

A 25% wettable powder formulation of diflubenzuron (100 ppm active ingredient) supplied in water to colonies of honeybees, *Apis mellifera* L., almost eliminated production of brood. Treated bees consumed significantly less water and pollen cake and produced significantly less comb, brood and new workers. Treated bees had more eggs in the combs.

Descriptors/Keywords: APIS-MELLIFERA, POLLEN CAKE, BROOD, PRODUCTION

Record - 102

BARKER R. J. 1977. LETTER SENT TO L. STANDIFER DATED NOV. 4, 1977: FIELD TEST OF DIMILIN AT RAINBOW VALLEY, ARIZONA: EFFECTS ON BROOD PRODUCTION OF BEES. SUMITTED NTP-67. UNPUBLISHED STUDY RECEIVED 1977 UNDER UNKNOWN ADMIN. NO., PREPARED BY US AG. RESEARCH SVC., WESTERN REGION, BEE RESEARCH LAB., SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO. KANSAS CITY, KS.

Record - 103

BARKER, R. J. AND S. TABER III. 1977. EFFECTS OF DIFLUBENZURON FED TO CAGED HONEY BEES (*APIS MELLIFERA*) COLONIES. ENVIRON. ENTOMOL. 6(4): 167-168.

Record - 104

BARKER, R. J., AND G. D. WALLER. 1977. EFFECTS OF DIFLUBENZURON IN WATER AND SYRUP SUPPLIED TO HONEY BEE COLONIES. U.S. AG. RESEARCH SVC., BEE RESEARCH LAB., UNPUBLISHED STUDY.

Record - 105

BARKER, R. J., G. L. NEWTON. 1976. INSECT GROWTH REGULATORS AND IN VITRO VOLATILE FATTY ACID PRODUCTION. J. DAIRY SCI. 59 (2): 321-323.

Record - 106

MOSQUITO CONTROL EFFICACY OF DIFLUBENZURON CGA-19255 AND SUMITHION IN SWINE WASTE LAGOONS

BARKER R W; BOORAM C V

J GA ENTOMOL SOC 14 (3). 1979. 238-244.

Full Journal Title: Journal of the Georgia Entomological Society

Language: ENGLISH

ABSTRACT

An insect growth inhibitor, insect growth regulator and an organophosphate were evaluated in the field against natural populations of *Culex salinarius*, *C. quinquefasciatus* and *C. restuans* larvae in artificial swine lagoons. The insect growth regulator diflubenzuron, (1-(4-chlorophenyl)-3-(2,6-difluorobenzoyl)-urea) and sumithion (0, 0-dimethyl 0-(4-nitro-m-toyl) phosphorothioate) were most effective and yielded complete control at 0.125 ppm, 2 days post-treatment. The insect growth inhibitor CGA-19255 (6-Azido-N-cyclopropyl-N'-ethyl-1,3,5-triazine-2,4-diamine) did not provide a high level of control 2 days post-treatment but mortality was significant at rates of 0.25 ppm and higher when compared to the control. Significant residual chemical control 14 to 35 days post-treatment was provided by CGA-19255 at 1 ppm and diflubenzuron at 0.125 ppm. Sumithion showed no residual activity at the rates tested. The effects of chemical treatments on normal lagoon biodegradation processes as indicated by

supernatant COD [chemical O2 demand] values were significant at 0.125, 0.25 and 0.25 ppm for CGA-19255, diflubenzuron and sumithion, respectively.

Descriptors/Keywords: CULEX-SALINARIUS, CULEX-QUINQUEFASCIATUS, CULEX-RESTUANS, MORTALITY, BIO DEGRADATION, CHEMICAL, OXYGEN DEMAND

Record - 107

BARKER, R. W., AND R. L. JONES. 1976. INHIBITION OF LARVAL HORN FLY HAEMATOBIA IRRITANS DEVELOPMENT IN THE MANURE OF BOVINES FED DIMILIN MINERAL BLOCKS. J. ECON. ENTOMOL. 69(4): 441-442.

Record - 108

BARKER, R. W. AND G. L. NEWTON. 1976. DIMILIN: EVALUATION AS A LIVESTOCK DIETARY FEED ADDITIVE FOR CONTROL OF MUSCA DOMESTICA LARVAE IN CATTLE WASTE. J. GA. ENTOMOL SOC. 11 (1): 71-75.

Record - 109

BARNES, J. R., AND G. M. BOOTH. 1977. IMPACT OF DIMILIN W-25 AND DIMILIN 1% GRANULAR TREATMENTS ON THE BENTHIC FAUNA OF PROVO BAY, UTAH. UNPUBLISHED STUDY RECEIVED JULY 31, 1981 UNDER 148-1259; PREPARED BY BRIGHAM YOUNG UNIV., DEPT OF ZOOLOGY, SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 110

BARNES, J. R. AND G. M. BOOTH. 1977. PROPOSAL TO DETERMINE THE EFFICACY AND IMPACT OF DIMILIN W-25 ON BLACKFLY AND NON-TARGET MACROINVERTEBRATE POPULATIONS. UNPUBLISHED STUDY RECEIVED APRIL 25, 1978 UNDER 41845-EX01; PREPARED BY BRIGHAM YOUNG UNIV., DEPT. OF ZOOLOGY, SUBMITTED BY SOUTH SALT LAKE COUNTY MOSQUITO ABATEMENT DISTRICT, MIDVALE, UT.

Record - 111

BARNETT, W. 1977. LETTER SENT OT J. WILKERSON DATED SEPT. 26, 1977, "DIMILIN FOR CODLING MOTH CONTROL", SUBMITTER NO. 4485, UNPUBLISHED STUDY RECEIVED FEB. 13, 1979 UNDER 148-EX-26, PREPARED BY UNIV. OF CALIF., BERKELEY, COOPERATIVE EXTENSION, SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 112

BART, J. 1975. AN EVALUATION OF THE IMPACT OF DIMILIN ON BIRDS. COOPERATIVE AGREEMENT NO. 42-178, PRELIM. PROGRESS REPORT, JAN 1975 THROUGH SEPT. 1975, (UNPUBLISHED STUDY RECEIVED JAN 12, 1976 UNDER 148-1170, PREPARED BY CORNELL UNIV., LABORATORY OF ORNITHOLOGY, SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 113

BARTH, A. 1981. STUDIES ON RESIDUES OF DIMILIN, AN INSECTICIDE INHIBITING THE MOULTING OF INSECT LARVAE, IN FOREST SOILS BY MEANS OF A NEW BIOTEST METHOD. ANZEIGER FUR SCHADLINGSKUNDE, PFLANZENSCHUTZ UMWELTSCHUTZ. 54 (11): 164-169.

Record - 114

BAUML, W. 1982. FIELD STUDIES OF EFFECTS OF DIMILIN ON THE HONEY BEE APIS MELLIFICA L. ANZEIGER FUR SCHADLINGSKUNDE, PFLANZENSCHUTZ, UMWELTSCHUTZ, 55(7): 97-101.

Record - 115

BAUMLER, W., AND H. S. SALAMA. 1976. SOME BIOCHEMICAL CHANGES INDUCED BY DIMILIN IN THE GYPSY MOTH PORTHETRIA DISPAR L. (FOREST PESTS), (AL) Z ANGEW ENTOMOL. 81(3): 304-310.

Record - 116

EFFECT OF SOME GRANULAR INSECTICIDES ON THE AVAILABILITY OF MAJOR NUTRIENTS IN SOILS SUPPLEMENTED WITH DIFFERENT SOURCES OF ORGANIC MATTER

BAYOUMI N A; WALY T M

AIN SHAMS UNIV FAC AGRIC RES BULL 0 (1795). 1982. 1-16.

Full Journal Title: Ain Shams University Faculty of Agriculture Research Bulletin

Language: ENGLISH

ABSTRACT

Effect of the granular insecticides ECR-2019, Dimilin and Dursban on N mineralization and levels of available P and K in alluvial clay loam and calcareous loam soils supplemented with 3 sources of organic matter (poudrette, farmyard manure and super humus) was studied. The insecticides showed similar trends on the changes in the availability of N, P and K in both soils, where they were generally inhibitory. Order of inhibition was Dimilin > Dursban ECR-2019. Application of insecticides increased N loss from soils; dimilin was the most effective and ECR-2019 the least in this connection. Soil type and source of organic matter revealed no effect on the pattern of insecticide action in general.

Descriptors/Keywords: SOIL, MICROORGANISM, ECR-2019, DIMILIN, DURSBAN, PHOSPHORUS, POTASSIUM, NITROGEN, MINERALIZATION

Record - 117

BEAVERS, J. B., AND H. JAFFE. 1977. CITRUS, SUGARCANE ROOTSTALK BORER WEEVIL DIAPREPES ABBREVIATUS L. INSECT GROWTH REGULATOR (DIFLUBENZURON). US AGRIC RES. REPRINTS.

Record - 118

BEAVERS, J. B., W. J. SCHROEDER, AND A. G. SELHIME. 1976. EFFECT OF DIFLUBENZURON ON LARVAE OF DIAPREPES ABBREVIATUS (SUGARCANE PESTS). FLA. ENTOMOL. 59(4): 434.

Record - 119

EFFECTS OF 2 HYDROXY ECDYSONE JUVENILE HORMONE DIMILIN AND CAPTAN ON IN-VITRO SYNTHESIS OF PERITROPHIC MEMBRANES IN CALLIPHORA ERYTHROCEPHALA

BECKER B

J INSECT PHYSIOL 24 (10-11). 1978. 699-706.

Full Journal Title: Journal of Insect Physiology

Language: ENGLISH

ABSTRACT

The synthesis of peritrophic membranes in adult *C. erythrocephala* in vitro is stimulated by .beta.-ecdysone (20-hydroxy-ecdysone), and inhibited by cecropia juvenile hormone and the chitin inhibitors Dimilin and Captan. The peritrophic membranes 1-3 formed in vitro in modified Leloup's medium containing insect hormones or chitin inhibitors show remarkable structural changes, a differential increase

in thickness and a disturbed formation of the electron dense layer of the peritrophic membrane 1.

Descriptors/Keywords: CECROPIA, BETA ECDYSONE, MOLTING HORMONE, CHITIN INHIBITOR, INSECTICIDE, ELECTRON MICROSCOPY, ULTRASTRUCTURE

Record - 120

STERILANT AND OVICIDAL ACTIONS OF DIFLUBENZURON ON THE RICE SWARMING CATERPILLAR SPODOPTERA MAURITIA

BEEVI S P; DALE D

PESTICIDES (BOMBAY) 18 (10). 1984. 54-55.

Full Journal Title: PESTICIDES (Bombay)

Language: ENGLISH

Descriptors/Keywords: INSECT GROWTH REGULATOR

Record - 121

BEEVI, S. P., AND D. DALE. 1980. EFFECT OF DIFLUBENZURON ON THE LARVE OF RICE SWARMING CATERPILLAR SPODOPTERA MAURITIA BOISD. (LEPIDOPTERA: NOCTUIDAE). J. OF ENTOMOL. RESEARCH 4(2): 157-160.

Record - 122

HYSIOLOGICAL AND CHEMICAL INSECTICIDES IN THE CONTROL OF SPODOPTERA FRUGIPERDA J.E. SMITH 1797 LEPIDOPTERA NOCTUIDAE IN CORN

BELLETTINI S; BELLETTINI N M T; HIRAI L T; MOREIRA E M; ZANARDO M C; KOBAYASHI W M
AN SOC ENTOMOL BRAS 21 (3). 1992. 261-266.

Full Journal Title: Anais da Sociedade Entomologica do Brasil

Language: PORTUGUESE

ABSTRACT

The control of *S. frugiperda* in field corn with chemical and physiological insecticides was evaluated in Bandeirantes, PR, Brazil. The following treatments were used in a.i./ha: chlorfluazuron (Atabron 50 EC) 12,5; 25; 37,5 and 50g; diflubenzuron (Dimilim 25 WP) 20g; deltamethrin (Decis 2,5 EC) 7,5g and control (without treatment). The evaluations were done at 1, 3, 9 and 12 days after the application when 10 plants per plot were collected at random and opened their ears to count the alive armyworms. It was concluded that the physiological insecticides chlorfluazuron and diflubenzuron showed from 75,2 to 97,6% of control at 3, 9 and 12 days after application and the chemical insecticide, deltamethrin, was very efficient, with more than 85% in all the evaluations due to the biggest shock effect.

Descriptors/Keywords: ARMYWORM, CHLORFLUAZURON, DIFLUBENZURON, DELTAMETHRIN, BRAZIL

Record - 123

BIO CONCENTRATION OF PESTICIDES BY EGG MASSES OF THE CADDIS-FLY TRIAENODES TARDUS

BELLUCK D; FELSOT A

BULL ENVIRON CONTAM TOXICOL 26 (3). 1981. 299-306.

Full Journal Title: Bulletin of Environmental Contamination and Toxicology

Language: ENGLISH

Descriptors/Keywords: DDT, DDD, HEXA CHLORO BENZENE, CARBOFURAN, DIELDRIN, METHOXYCHLOR, TERBUFOS, MALATHION, DIFLUBENZURON, MONURON, WATER POLLUTION

Record - 124

EVALUATION THE BIOLOGICAL ACTIVITY OF CHITIN INHIBITORS USING COLORADO POTATO BEETLE AS AN EXAMPLE

BEN'KOVSKAYA G V; AMIRKHANOV D V

AGROKHIMIYA 0 (4). 1992. 120-127.

Full Journal Title: Agrokimiya

Language: RUSSIAN

ABSTRACT

Descriptors/Keywords: DIFLUBENZURON, TRIFLUMURON, CHLORFLUAZURON, AGE RELATED, LARVAL SENSITIVITY

Record - 125

THE EFFECT OF DIFLUBENZURON FEEDING ON GLYCOSAMINO GLYCAN AND SULF HEMO GLOBIN BIOSYNTHESIS IN MICE

BENTLEY J P; WEBER G H; GOULD D

PESTIC BIOCHEM PHYSIOL 10 (2). 1979. 162-167.

Full Journal Title: Pesticide Biochemistry and Physiology

Language: ENGLISH

ABSTRACT

Diflubenzuron (Dimilin), an inhibitor of insect chitin synthesis, was fed to mice in concentrations of 50-2000 ppm in the diet. The activity of the mammalian hexosamine transferases responsible for glycosaminoglycan (mucopolysaccharide) formation was monitored by measuring the in vivo rate of incorporation of a labeled precursor into hyaluronic acid and chondroitin sulfate of skin. No inhibition of biosynthesis was noted at any concentration; the insecticide apparently stimulated the production of these compounds. After 3 wk on the diet, mice eating 1000 and 2000 ppm diflubenzuron showed obvious signs of cyanosis, and sulfhemoglobin was demonstrated in the blood of mice eating more than 200 ppm. The amount of sulfhemoglobin was apparently related to the dietary insecticide content and the highest level seen was 13% of total Hb in the 2000 ppm group after 31 days. These values returned to normal within 3 wk when diflubenzuron was removed from the diet.

Descriptors/Keywords: INSECTICIDE, INSECT, CYANOSIS, HEXOSAMINE TRANSFERASE

Record - 126

BERG, G. VAN DEN. 1986. DISSIPATION OF DIFLUBENZURON RESIDUES AFTER APPLICATION OF DIMILIN WP-25 IN A FORESTRY AREA IN NORTH CAROLINA AND SOME ECOLOGICAL EFFECTS. REPORT NO. 56637/47/1986.

Record - 127

BEROZA, M. 1978. RESIDUES FOUND IN SOYBEAN PROCESS FRACTIONS FROM BEANS SPIKED WITH DIFLUBENZURON. UNPUBLISHED STUDY SUBMITTED IN LETTER FROM D. FERRELL (THOMPSON HAYWARD CHEMICAL CO.) TO C. T. MITCHELL (PM 17, RD, OPP, EPA) AUG. 10, 1978.

Record - 128

BEROZA, M. 197?. RESIDUES OF DIFLUBENZURON IN SWINE (RESIDUE TEST #1494) AND SHEEP (RESIDUE TEST #1184) FED DIFLUBENZURON, SUMMARY OF STUDIES 234514-G AND 234514-I. UNPUBLISHED STUDY RECEIVED JUL. 31, 1978 UNDER 148-1259, SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO.

Record - 129

EFFECT OF DIFLUBENZURON ON EUROPEAN CORN BORER OSTRINIA NUBILALIS LARVAE

BERRY E C; FARAGALLA A A; LEWIS L C; GUTHRIE W D

IOWA STATE J RES 61 (1). 1986. 91-98.

Full Journal Title: Iowa State Journal of Research

Language: ENGLISH

ABSTRACT

The effect of diflubenzuron on European corn borer, *Ostrinia nubilalis* (Hubner), larvae was determined. As a result of treatments, larvae, pupae, and adults exhibited a number of different abnormalities. Larval mortality was more closely associated with the total time they were exposed to diflubenzuron than associated with a particular instar. The effects from ECB larvae feeding on a diflubenzuron-treated diet were manifested in larval mortality and also during subsequent stages.

Descriptors/Keywords: INSECTICIDE, LARVAL MORTALITY, GROWTH REGULATOR, INGESTION

Record - 130

FIELD EVALUATION OF DIFLUBENZURON FOR CONTROL OF 1ST AND 2ND GENERATION EUROPEAN CORN BORER OSTRINIA NUBILALIS

BERRY E C; FARAGALLA A A; GUTHRIE W D

J ECON ENTOMOL 73 (5). 1980). 634-636.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Two field experiments were conducted in Ankeny, Iowa [USA], in 1976, to determine the effectiveness of diflubenzuron against *O. nubilalis* (Huebner). Corn plants treated with a 2% granular [G] formulation of diflubenzuron had significantly fewer 1st generation European corn borers and less stalk damage than plants treated with a 25% WP [wetttable powder] formulation. Application rates of 0.28, 0.56 and 1.12 kg AI[active ingredient]/ha resulted in significantly fewer normal larvae and less stalk damage in treated plants than in untreated plants and 2 applications resulted in significantly fewer larvae than 1 application. In another field study, corn plants treated with a 2% G formulation or with a 25% WP formulation of diflubenzuron had equal numbers of 2nd generation European corn borers. Application rates of 0.28, 0.56 and 1.12 kg AI/ha resulted in significantly fewer normal larvae in treated plants than in untreated plants.

Descriptors/Keywords: CORN PLANT, STALK DAMAGE, WETTABLE POWDER, GRANULAR FORMULATION, IOWA, USA

Record - 131

TOXICITY OF DIFLUBENZURON IN LARVAE OF GYPSY MOTH LEPIDOPTERA LYMANTRIIDAE EFFECTS OF HOST PLANT

BERRY R E; MOLDENKE A F; MILLER J C; WERNZ J G

J ECON ENTOMOL 86 (3). 1993. 809-814.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Larvae of gypsy moth, *Lymantria dispar* (L.), reared on Douglas-fir, *Pseudotsuga menziesii* (Mirb.)

Franco, were significantly more tolerant of both topically and orally administered diflubenzuron than were those raised on white alder (*Alnus rhombifolia* Nutt.). Topical administration resulted in an LD50 of 8.96 .mu.g/g larva for larvae reared on Douglas-fir and 3.58 .mu.g/g larva for larvae reared on alder. The LC50s obtained with orally administered diflubenzuron were 0.38 ppm for larvae reared on Douglas-fir and 0.07 ppm for larvae reared on alder. Topically treated females reared on either host and orally treated females reared on alder required significantly longer to pupate than did controls, but developmental periods of males reared on alder and both sexes reared on Douglas-fir were unaffected by oral treatment. Pupal weights were not affected by treatment in either sex, whether larvae were reared on Douglas-fir or alder

Descriptors/Keywords: LYMANTRIA-DISPAR, PSEUDOTSUGA-MENZIESII, ALNUS-RHOMBIFOLIA, INSECT PESTS, FORESTRY INDUSTRY

Record - 132

BETKE, P., T. HIEPE, P. MULLER, W. NETSCH, R. RIBBEK, H. SCHULTKA, AND K. G. THIEMANN. 1988. PASSAGE OF DIFLUBENZURON (DIMILIN WP-25) AN INHIBITOR OF CHITIN BIOSYNTHESIS-APPLICATION TO SWINE TO CONTROL PIGSTY FLIES UNDER CONDITIONS OF HIGH-INTENSITY KEEPING. ARCHIV. FUR EXPERIMENTELLE VETERINARMEDIZIN, 42(3): 458-460.

Record - 133

LABORATORY EVALUATION OF INSECT GROWTH REGULATING COMPOUNDS AGAINST MOSQUITOES

BHAKSHI N; BHASIN V K; PILLAI M K K

ENTOMON 7 (4). 1982 . 469-474.

Full Journal Title: Entomon

Language: ENGLISH

ABSTRACT

The efficacy of 2 chitin-synthesis inhibitors, Diflubenzuron and Penfluron, was assessed against *Aedes aegypti*, *Culex quinquefasciatus*, *Anopheles stephensi* and *A. culicifacies* by treating them continuously at 2nd, 3rd or 4th instar larvae until pupation. *A. culicifacies* was highly susceptible to both compounds. Penfluron was almost equally effective against all 4 spp. of mosquitoes tested, while diflubenzuron proved to be more effective against *Anophelines* only.

Descriptors/Keywords: AEDES-AEGYPTI, CULEX-QUINQUEFASCIATUS, ANOPHELES-STEPHENSII, ANOPHELES-CULICIFACIES, DIFLUBENZURON, PENFLURON

Record - 134

APPLE MALUS DOMESTICA BORKH. GOLDEN DELICIOUS ROME BEAUTY STAYMAN TUFTEDAPPLE
BUD MOTH TABM PLATYNOTA IDAEUSALIS WALKER OBLIQUEBANDED LEAFROLLER
CHORISTONEURA ROSACEANA HARRIS REDBANDED LEAFROLLER ARGYROTAENIA VELUTINANA
WALKER APPLE EVALUATION OF IGRS FOR TUFTED APPLE BUD MOTH CONTROL 1990

BIDDINGER D J; HULL L A

THOMAS, J. H. (ED.). INSECTICIDE AND ACARICIDE TESTS, VOL. 16. 327P.

ENTOMOLOGICAL SOCIETY OF AMERICA: LANHAM, MARYLAND, USA. ILLUS. PAPER. 0 (0). 1991. 3-4.

Language: ENGLISH

Descriptors/Keywords: INSECT GROWTH REGULATORS, DIMILIN, DIPEL, LORSBAN, TWEEN 20

Record - 135

STUDIES ON CYROMAZINE AND DIFLUBENZURON IN THE SHEEP BLOWFLY LUCILIA CUPRINA
INHIBITION OF VERTEBRATE AND BACTERIAL DIHYDROFOLATE REDUCTASE BY CYROMAZINE
BINNINGTON K C; RETNAKARAN A; STONE S; SKELLY P
PESTIC BIOCHEM PHYSIOL 27 (2). 1987. 201-210.

Full Journal Title: Pesticide Biochemistry and Physiology

Language: ENGLISH

ABSTRACT

Cyromazine causes epidermal cells of third instar *Lucilla cuprina* larvae to invade the cuticle and produce necrotic lesions whereas diflubenzuron inhibits chitin synthesis and thus results in the secretion of an imperfect cuticle. Ultrastructural as well as biochemical results indicate that cyromazine, unlike diflubenzuron, does not inhibit incorporation of N-acetyl-D[1-14C]glucosamine into cuticle.

Diflubenzuron and cyromazine-treated larvae weigh less and have cuticles which weigh less than those of controls. In the case of diflubenzuron this may be a consequence of decreased chitin production whereas cyromazine may have a more direct effect on protein synthesis. Electrophoresis shows that the inhibition did not change the pattern of cuticular proteins; both cyromazine and diflubenzuron apparently affect the production of all cuticular proteins to the same extent. Dihydrofolate reductase from chicken liver and bacteria is inhibited by cyromazine at a concentration of 10^{-5} M. It is suggested that, while inhibition of this enzyme is unlikely to be the this insecticide on nucleic acid metabolism warrant further investigation.

Descriptors/Keywords: CHICKEN LIVER, NUCLEIC ACID, METABOLISM, CHITIN SYNTHESIS INHIBITION, NECROTIC LESIONS, ELECTROPHORESIS

Record - 136

ULTRASTRUCTURAL CHANGES IN THE CUTICLE OF THE SHEEP BLOWFLY
LUCILIA CUPRINA INDUCED BY CERTAIN INSECTICIDES AND BIOLOGICAL INHIBITORS
BINNINGTON K C

TISSUE CELL 17 (1). 1985. 131-140.

Full Journal Title: Tissue & Cell

Language: ENGLISH

ABSTRACT

The ultrastructural effects on larval cuticle of *L. cuprina* of 2 inhibitors of chitin synthesis, diflubenzuron and polyoxin D, and an inhibitor of dihydrofolate reductase, aminopterin, are compared with those of the insecticide, cyromazine. Diflubenzuron and polyoxin D both prevent the formation of a normal lamellate appearance in procuticle and interfere with deposition of epicuticle. Aminopterin and cyromazine cause necrotic lesions in the cuticle which, in the case of cyromazine, are contiguous with invasive processes of epidermal cells. There is an accumulation of electron-dense granules in some epidermal cells in larvae poisoned with aminopterin or cyromazine. Aminopterin has a more drastic cytotoxic effect than cyromazine and it also interferes with the formation of epicuticle. The lesions produced by cyromazine treatment are not mimicked precisely by any of the other chemicals. There is closer accord between the effects of cyromazine and aminopterin than between cyromazine and the inhibitors of chitin formation.

Descriptors/Keywords: CHITIN, DIFLUBENZURON, POLYOXIN D, AMINOPTERIN, CYROMAZINE

Record - 137

BIONOMICS, E G & G, INCORPORATED. 1975. THE ACUTE AND SUBCHRONIC TOXICITY OF R-20458, ALTOSID AND TH-6040 TO THE GRASS SHRIMP, PALAEMONETES PUGLIO. FINAL REPORT (UNPUBLISHED STUDY RECEIVED FEB. 10, 1976 UNDER 6G1744, SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 138

BIRDSONG, R., 1965 FIELD TEST OF DIMILIN ON NON-TARGET ORGANISMS IN VIRGINIA. FILE #179, FINAL REPORT, UNPUBLISHED STUDY RECEIVED JULY 19, 1976 UNDER 148-1262, PREPARED BY ENVIRONMENTAL CONSULTANTS, INC. SUBMITTED BY THOMPSON HAYWARD CHEMICAL CO, KANSAS CITY, KS.

Record - 139

BISCARDI, S. F. 1977. TOXICOLOGICAL REVIEW OF STUDIES SUBMITTED IN SUPPORT OF PESTICIDE PETITIONS NOS. 7F 1898, 6F 1773 AND 6F 1832, TO CHARLES MITCHELL, 9/26/77. (TOX REVIEWS 000962, 000963, 000964).

Record - 140

UPTAKE OF DIFLUBENZURON N-4 CHLOROPHENYLAMINOCARBONYL-2 6-DIFLUORO BENZAMIDE BY RAT C-6 GLIAL CELLS IN-VITRO

BISHAI W R; STOOLMILLER A C

PESTIC BIOCHEM PHYSIOL 11 (1-3). 1979. 258-266.

Full Journal Title: Pesticide Biochemistry and Physiology

Language: ENGLISH

ABSTRACT

The uptake, subcellular localization, and metabolic fate of the insecticide [14C]diflubenzuron, N-[[4-(4-dichlorophenyl)amino]carbonyl]-2,6-difluorobenzamide, in cultured rat C6 glial cells were characterized. Confluent monolayer cultures display a concentration-dependent uptake of the labeled insecticide. Experiments conducted in the presence and absence of dimethyl sulfoxide (DMSO) showed that 1.2% DMSO in the growth medium had no significant effect on the radioactivity incorporation rate. Diflubenzuron was not metabolized to any measurable extent and more than 98% of the administered compound could be recovered from whole cells and the culture medium by extraction with diethyl ether. As much as 95% of the cell-associated radioactivity was localized in the particulate fraction. Pulse-chase experiments revealed that < 10% of the [14C]diflubenzuron incorporated during 24 h of incubation was released into the growth medium over a period of 48 h. This study in conjunction with a previous investigation apparently indicates that diflubenzuron is neither cytotoxic nor does it inhibit the synthesis of complex carbohydrates in animal cells.

Descriptors/Keywords: RAT GLIAL TUMOR C-6 CELLS, NONCYTOTOXIC, CARBOHYDRATE SYNTHESIS, MONO LAYER CULTURE, PULSE CHASE EXPERIMENTS, DI METHYL SULFOXIDE

Record - 141

THREE YEARS OF SPECIFIC CONTROL OF SUMMER FRUIT TORTRIX AND CODLING MOTH ON APPLE IN THE NETHERLANDS

BLOMMERS L; VAAL F; FRERIKS J; HELSEN H

J APPL ENTOMOL 104 (4). 1987. 353-371.

Full Journal Title: Journal of Applied Entomology

Language: ENGLISH

ABSTRACT

Nuclear polyhedrosis virus and mating disruption by pheromone against summer fruit tortrix (*Adoxophyes orana*) and granulosus virus against codling moth (*Cydia pomonella*) were applied in different parts of a large apple plantation during 2, or partly 3, consecutive years. This was done in comparison with applications of fenoxycarb, resp. diflubenzuron, representing the regular treatments against these pests in apple IPM. The virus preparation against summer fruit tortrix was very effective. The density of this species stayed below the control threshold also in the mating disruption area. Natural mortality by parasitoids, especially of caterpillars in the summer, has added undoubtedly

to these results. The granulosis virus was effective against codling moth. It may replace diflubenzuron as the treatment of choice in apple and pear IPM. Incomplete entries due to a slower killing effect were rare throughout. Although other leafroller species are not affected by these specific control methods, their overall density went down over the years. Only *Pandemis heparana* maintained its numbers more or less, but its contribution to the amount of leafroller damage at harvest, appeared to be limited. Other leafroller species, especially *Spilonota ocellana*, disappeared almost completely, together with the fresh leafroller damage found on apples at harvest. Incidental springtime applications of mineral oil or carbaryl against other pests were probably responsible for this. The fact that such treatments against minor pests are needed occasionally also in commercial orchards, improves the possibility to implement the specific control methods against *A. orana* in orchard IPM. The results indicate moreover that other leafrollers, such as *Archips podana* and *A. rosana* do not rise in numbers automatically as soon as broad-spectrum chemical control is stopped. As the percentage parasitization of the other leafroller species was about 10%, or at most 30%, natural mortality due to predators has to be considered as an important control factor. The ovicidal side effect of fenoxycarb on codling moth eggs was confirmed.

Descriptors/Keywords: ADOXOPHYES-ORANA, CYDIA-POMONELLA, PANDEMIS-HEPARANA, SPILONOTA-OCCELLANA, ARCHIPS-PODANA, ARCHIPS-ROSANA, NUCLEAR POLYHEDROSIS VIRUS, GRANULOSIS VIRUS, LEAFROLLER, PEAR, POPULATION DYNAMICS, PHEROMONE, MATING DISRUPTION, PARASITIZATION, PREDATION, FENOXYCARB, DIFLUBENZURON, MINERAL OIL, CARBARYL, INSECTICIDE, OVICIDE, MORTALITY, INTEGRATED PEST CONTROL

Record - 142

INVESTIGATIONS ON THE EFFECT OF INSECT GROWTH REGULATORS AND INHIBITORS ON THE PREDATORY MITE PHYTOSEIULUS PERSIMILIS A.H. WITH PARTICULAR EMPHASIS ON CYROMAZINE

BLUEMEL S; STOLZ M

Z PFLANZENKR PFLANZENSCHUTZ 100 (2). 1993. 150-154.

Full Journal Title: Zeitschrift fuer Pflanzenkrankheiten und Pflanzenschutz

Language: ENGLISH

ABSTRACT

The commercial formulations of eight growth regulators and inhibitors were tested for their side-effects on the predatory mite *Phytoseiulus persimilis*. Laboratory tests were carried out to evaluate the residual effect on the predator's juvenile stages, the ovo-larvicidal effect and the impact of contaminated food on the test species. In addition, cyromazine was tested in a semi-field situation, for systemic action and for its persistence. Triflumuron, buprofezin, flufenoxuron, diflubenzuron, fenoxycarb and teflubenzuron proved to be harmless in all trials at the commercially recommended rates. Cyromazine and flucycloxuron showed moderately harmful respectively severe effects on the predator's egg production in the laboratory test on residual activity. Further testing of cyromazine showed that the product was harmless when predatory mites were fed with contaminated spider mites or when juvenile stages of *P. persimilis* were exposed to 1 week-old spray deposits. Cyromazine was also harmless to the predatory mite when the product was transported systemically in bean plants and the mites were exposed to the leaves. The product had never any effect on the eggs of *P. persimilis*.

Descriptors/Keywords: CONTAMINATED SPIDER MITES, BEAN, TRIFLUMURON, BUPROFEZIN, FLUFENOXURON, DIFLUBENZURON, FENOXYCARB, TEFLUBENZURON, SPRAY, PLANT TRANSPORT, BIOLOGICAL CONTROL, INTEGRATED PEST MANAGEMENT, FECUNDITY, DEVELOPMENT, EGG, LARVA, HARM

Record - 143

BLUMBERG, A. Y. 1986. SURVEY OF AQUATIC SOIL AND SOIL SURFACE INVERTEBRATE FAUNA IN A NORTH CAROLINA FOREST (PRE- AND POST APPLICATION OF DIMILIN WP-25). REPORT B. V. DUPHAR, NO. 56635/24/1986.

Record - 144

BLUME, R., G. OHLER, D., ET. AL. 1975. THE EFFECT OF TH-6040 ON ONTHOPHAGUS GAZELLA F (SCARABAEIDAE); A NON-TARGET ORGANISM. UNPUBLISHED STUDY RECEIVED FEB. 7, 1977 UNDER UNKNOWN ADMIN. NO., SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO, KANSAS CITY KS.

Record - 145

GYPSY MOTH LYMANTRIA DISPAR LEPIDOPTERA LYMANTRIIDAE POPULATION CONTROL USING MECHANICAL BARRIERS AND CONTACT INSECTICIDES APPLIED TO TREE STEMS

BLUMENTHAL E M; HOOVER C R

J ECON ENTOMOL 79 (5). 1986. 1394-1396.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Stem applications of two contact insecticides (carbaryl and a water-based pyrethroid mixture containing fenvalerate and tetramethrin), two chitin-inhibiting benzoylphenylureas (BPU) (diflubenzuron and triflumuron), and three mechanical barrier device were tested in 1984 for gypsy moth, *Lymantria dispar* (L.), population control (egg mass reduction) on moderately infested red oaks, *Quercus rubra* L., in Pennsylvania [USA]. Sprays applied directly to three stems and to burlap refugia were tested. Barrier devices included maintained, but unsprayed, burlap refugia; a commercial sticky tape; and a loose insect-trapping adhesive. Gypsy moth density in burlap-banded and unbanded control trees increased by 54 and 190%, respectively. Stem and burlap sprays of BUP resulted in a ca. 50% reduction in egg masses. Burlap sprays of either carbaryl or the pyrethroid mixture appeared to inhibit population increase as did the maintained burlap refugia and both sticky barriers.

Descriptors/Keywords: QUERCUS-RUBRA, PHYSICAL CONTROL, CARBARYL, FENVALERATE, TETRAMETHRIN, DIFLUBENZURON, TRIFLUMURON, INSECT GROWTH REGULATOR, PENNSYLVANIA USA

Record - 146

BOCSOR, J. G. AND R. B. MOORE. 1975. THE EFFECTS OF DIMILIN ON A STREAM MACROINVERTEBRATE COMMUNITY. IN: REPORT STATE UNIV. OF NEW YORK, LAKE ONTARIO ENVIRONMENT LAB.

Record - 147

ANALYSIS OF PESTICIDE EXPOSURE PADS USING SELECTIVE ABSORPTION AND ELUTION OF REVERSED-PHASE SOLID SUPPORT

BOGUS E R; GALLAGHER P A; CAMERON E A; MUMMA R O

J AGRIC FOOD CHEM 33 (6). 1985. 1018-1021.

Full Journal Title: Journal of Agricultural and Food Chemistry

Language: ENGLISH

ABSTRACT

A sensitive, inexpensive procedure has been developed for the rapid analysis of applicator exposure pads. The pads were extracted with methanol or ethanol, the pesticides were selectively adsorbed and eluted on a reversed-phase solid support (SEP-PAKs) (a concentration step of 50:1), and the eluate was analyzed by high-pressure liquid chromatography. The technique has been field tested with two

insecticides, carbaryl and diflubenzuron, providing a sensitivity of 50 and 240 ng of residue/pad (103.2 cm²), respectively. Multiple samples can be worked up at the same time, and the procedure eliminates the need for more costly organic solvents, liquid/liquid extractions, or solvent evaporation steps.

Descriptors/Keywords: CARBARYL, DIFLUBENZURON, INSECTICIDE, INSECT GROWTH REGULATOR, HIGH-PERFORMANCE LIQUID CHROMATOGRAPHY, APPLICATOR, HAZARDOUS OCCUPATION

Record - 148

RANGELAND GRASSES NEEDLE AND THREAD STIPA COMATA TRIN. AND RUPR. CHEATGRASS BROME BROMUS TECTORUM L. GRASSHOPPERS MELANOPLUS CONFUSUS SCUDDER AULOCARA ELLIOTTI THOMAS AMPHITORNUS COLORADUS THOMAS AGENEOTETTIX DEORUM SCUDDER CORDILLACRIS OCCIPITALIS THOMAS EVALUATION OF DIMILIN BRAN-BAIT FOR RANGELAND GRASSHOPPER CONTROL 1990
BOMAR C R; LOCKWOOD J A
THOMAS, J. H. (ED.). INSECTICIDE AND ACARICIDE TESTS, VOL. 16. 327P.
ENTOMOLOGICAL SOCIETY OF AMERICA: LANHAM, MARYLAND, USA. ILLUS. PAPER. 0 (0). 1991. 212-213.
Language: ENGLISH

Record - 149

BOOTH, G. M., D. ALDER, M. L. LEE, R. C. WHITMORE, AND R. E. SEEGMILLER. 1987. ENVIRONMENTAL FATE AND EFFECTS OF 1-4(4-CHLOROPHENYL)-3-(2,6-DIFLUOROBENZOYL) UREA (DIFLUBENZURON, DIMILIN). (AL) IN: J.E. WRIGHT AND A. RETNAKARAN (EDS) BENZOYLPHENYL USES. PLENUM, NEW YORK.

Record - 150

BOOTH, G. M., D. C. ALDER, M. L. LEE, ET. AL. 1987. ENVIRONMENTAL FATE AND PROPERTIES OF 1-(4-CHLOROPHENYL)-3-(2,6-DIFLUOROBENZOYL) UREA (DIFLUBENZURON, DIMILIN). IN: CHITIN AND BENZOYLPHENYL UREAS, JUNK PUBLISHERS.

Record - 151

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Record - 152

BOOTH, G. M., ET. AL. 1980. THE EFFECT OF DIFLUBENZURON ON RAT SERUM TESTOSTERONE, WEIGHT AND FOOD CONSUMPTION. RECEIVED 5/20/80 UNDER 148-1268.

Record - 153

BOOTH, G. M. 1978. AN EVALUATION OF DIMILIN AND DIFLUBENZURON TOXICITY TO AVIAN SPECIES. UNPUBLISHED STUDY RECEIVED FEB. 6, 1978 UNDER 148-1259, PREPARED BY BRIGHAM YOUNG UNIV., DEPT. OF ZOOLOGY, SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 154

BOOTH, G. M. AND D. FERRELL. 1977. (AL) DEGRADATION OF DIMILIN BY AQUATIC FOODWEBS (PESTICIDE RESIDUES). ENVIRON. SCI. RES. 10: 221-243.

Record - 155

BOOTH, G. M., S. JOHNSON, D. HUMAN, ET. AL. 1977. THE EFFECT OF DIFLUBENZURON ON THE REPRODUCTION OF BOBWHITE QUAIL. UNPUBLISHED STUDY RECEIVED FEB. 6, 1978 UNDER 148-1259, PREPARED BY BRIGHAM YOUNG UNIV., DEPTS. OF STATISTICS AND ZOOLOGY AND UNIV. OF ILLINOIS, SCHOOL OF LIFE SCIENCES, SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 156

BOOTH, G. M. 1975. THE IMPACT OF DIMILIN W-25 ON NON-TARGET INVERTEBRATES IN PONDS LOCATED IN SALT LAKE COUNTY, UTAH. FINAL REPORT. (UNPUBLISHED STUDY RECEIVED FEB. 10, 1976 UNDER 6G1744, PREPARED BY BRIGHAM YOUNG UNIV., DEPT. OF ZOOLOGY, SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 157

BOOTH, G. M. 1975. UPTAKE, METABOLISM AND ELIMINATION OF TH-6040 IN PSEUDOMONAS SP. REPORT THOMPSON-HAYWARD CHEMICAL COMPANY.

Record - 158

BOOTH, G. M., AND D. O. LOFTUS. 1975. A STUDY OF THE VOLATILITY AND LEACHING POTENTIAL OF DIMILIN W-25 FROM AN AGRICULTURAL REPORT. THOMPSON-HAYWARD CHEMICAL COMPANY

Record - 159

SOME NEW INSECT MOLT INHIBITORS DERIVED FROM BENZOYLBIURETS

BORDAS B; DEMILO A B; HAUGHT S B; FLIPPEN-ANDERSON J

192ND AMERICAN CHEMICAL SOCIETY NATIONAL MEETING, ANAHEIM, CALIF., USA, SEPT. 7-12, 1986. ABSTR PAP AM CHEM SOC 192 (0). 1986. NO PAGINATION.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: ABSTRACT, DIFLUBENZURON, INSECT GROWTH REGULATOR, STRUCTURE-ACTIVITY, RELATIONSHIPS

Record - 160

BOURQUIN, A. W., P. H. PRITCHARD, R. VANOLINDA, AND J. SAMELA. 1979. FATE OF DIMILIN IN ESTUARINE MICROCOSMS. ABSTR. ANNU. MEET. AM. SOC. MICROBIO. 79:232.

Record - 161

BOUSE, L., C. SCHAEFER, S. FERTIG, ET. AL. 1978. POTENTIAL EXPOSURE OF DIFLUBENZURON (DIMILIN) TO BIRDS, NON-TARGET AQUATIC ORGANISMS, AND HUMANS. (A COOPERATIVE USDA/STATE/USEPA ASSESSMENT), UNPUBLISHED STUDY RECEIVED JAN. 20, 1983 UNDER 37100-8, PREPARED IN COOPERATION WITH US DEPT. OF AGRICULTURE, LAND GRANT UNIV., SUBMITTED BY US ENVIRONMENTAL PROTECTION AGENCY BELTSVILLE, MD.

AN EVALUATION OF THE POTENTIAL OF DIFLUBENZURON FOR INTEGRATED PEST CONTROL IN APPLES

BOWER C C

GEN APPL ENTOMOL 12 (0). 1980. 41-48.

Full Journal Title: General and Applied Entomology

Language: ENGLISH

ABSTRACT

Control of codling moth (*Cydia pomonella*) and light-brown apple moth (*Epiphyas postvittana*) with fortnightly (9 sprays) or 3-weekly (7 sprays) programs of diflubenzuron was not as effective as a 3-weekly (7 sprays) program of azinphos-methyl in a single tree plot trial. There was no difference in effectiveness between the 2 diflubenzuron programs. In a separate trial diflubenzuron was applied as a cover spray for 2 seasons (1976-1977 and 1977-1978) to a block that was unsprayed in the previous season. Diflubenzuron permitted the survival of the phytoseiid mites *Typhlodromus helenae* and *T. occidentalis*, but was toxic to the eggs of *Stethorus* spp. *T. helenae* failed to increase sufficiently to controlled mite (*Tetranychus urticae*) in 2 seasons. *T. occidentalis* invaded the block in 1976-1977 and apparently displaced *T. helenae*, as the latter species was not found in 1977-1978. Diflubenzuron was harmless to *Aphelinus mali*, an important parasite of woolly aphid (*Eriosoma lanigerum*), but allowed the apple leafhopper (*Typhlocyba froggatti*) to reach damaging levels. Diflubenzuron may have potential as the basis for integrated control programs where *T. occidentalis* is used for biological control of *T. urticae*. It appears suitable only for districts where codling moth pressure is low, and provides little or no advantage over integrated programs using *T. occidentalis* for the control of mites, and azinphos-methyl for the control of codling moth and light-brown apple moth.

Descriptors/Keywords: CYDIA-POMONELLA, EPIPHYAS-POSTVITTANA, TYPHLODROMUS-HELENAE, TYPHLODROMUS-OCCIDENTALIS, STETHORUS-SPP, TETRANYCHUS-URTICAE, APHELINUS-MALI, ERIOSOMA-LANIGERUM, TYPHLOCYBA-FROGGATTI, AZINPHOS-METHYL, BIOLOGICAL CONTROL

SELECTIVITY OF 5 INSECTICIDES FOR CODLING MOTH LASPEYRESIA POMONELLA CONTROL EFFECTS ON THE TWO-SPOTTED SPIDER MITE TETRANYCHUS URTICAE AND ITS PREDATORS

BOWER C C; KALDOR J

ENVIRON ENTOMOL 9 (1). 1980. 128-132.

Full Journal Title: Environmental Entomology

Language: ENGLISH

ABSTRACT

Five insecticides were tested against *L. pomonella* (L.), and their effects on *T. urticae* (Koch) and its predators were determined. The broadspectrum insecticides permethrin (0.013%), azinphos-methyl (0.05%) and leptophos (0.045%) gave equal control of *L. pomonella* under a 3 weekly program of 7 sprays. Poorer control was given by the selective chemicals chlordimeform (0.05%) and diflubenzuron (0.05%). Both chlordimeform and permethrin suppressed *T. urticae* populations. No predators of mites were found on permethrin treated [apple] trees and very few were found on trees sprayed with the organophosphates. Chlordimeform appeared relatively harmless to all stages of *Stethorus* spp. and diflubenzuron appeared harmless to *Stethorus* adults, but was toxic to the eggs. Small numbers of predatory mites of 3 spp. [*Typhlodromus occidentalis* Nesbitt, *T. helenae* Schicha and Dosse and *Agistemus* sp.] were recovered from diflubenzuron treated trees towards the end of the season.

Descriptors/Keywords: TYPHLODROMUS-OCCIDENTALIS, TYPHLODROMUS-HELENAE, AGISTEMUS-SP, STETHORUS-SPP, PERMETHRIN, AZINPHOS-METHYL, LEPTOPHOS, CHLORDIMEFORM, DIFLUBENZURON

Record - 164

RESPONSE OF HYDROPSYCHIDAE INSECTA TRICHOPTERA LARVAE TO DIFLUBENZURON

BRADT P T; WILLIAMS J A

ENVIRONMENTAL STUDIES CENTER, LEHIGH UNIVERSITY, CHANDLER-ULLMANN 17,
BETHLEHEM, PA. 18015.

J PA ACAD SCI 64 (1). 1990. 19-22.

Full Journal Title: Journal of the Pennsylvania Academy of Science

Language: ENGLISH

ABSTRACT

The purpose of this study was to test the effects of diflubenzuron on a widely distributed stream insect. Hydropsychidae (Insecta: Trichoptera) larvae were collected from a local stream and exposed in the laboratory to different concentrations of diflubenzuron (0.25 ppm 0.025 ppm and 0.0025 ppm active ingredient), an insect growth regulator. Fifteen days following exposure 1.9% (8 out of 419) Hydropsychidae larvae survived at 0.0025 ppm, 2.2% (10 out of 459) at 0.025 ppm and 0.59% (2 out of 449) at 0.25 ppm. In the control tanks 44.6% (193 out of 433) of the larvae survived, including 31.6% (137) of the surviving larvae that emerged as adults. Percent survival in the control tanks was lowest (40 to 42%) in May and June when tank water temperatures exceeded those temperatures occurring naturally in the stream. In the three experimental tanks no larvae emerged. Seventy-seven percent of the deaths in the experimental tanks occurred in the first seven days following exposure. The genus *Hydropsyche* comprised 94% of the test organisms while *Cheumatopsyche* made up the remaining 6%. These results suggest that extreme care should be taken when Hydropsychidae larvae may be exposed directly or indirectly to low concentrations of diflubenzuron.

Descriptors/Keywords: CHEUMATOPSYCHE, INSECT GROWTH REGULATOR, INSECTICIDE, BIOLOGICAL CONTROL, NON-TARGET ORGANISM, DEATH

Record - 165

METABOLIC PRODUCTS OF MICROORGANISMS PART 181 CHITIN SYNTHASE FROM FUNGI
A TEST MODEL FOR SUBSTANCES WITH INSECTICIDAL PROPERTIES

BRILLINGER G U

ARCH MICROBIOL 121 (1). 1979. 71-74.

Full Journal Title: Archives of Microbiology

Language: ENGLISH

ABSTRACT

Chitin synthase from *Coprinus cinereus* (Schaeff. ex Fr.) S.F. Gray (= *C. lagopus* sensu Buller) was used as a model for chitin synthase from insects. The effect of dimilin (difluorobenzuron), captan (trichloromethylsulfonyl fungicide), kitazin P (organophosphorus ester fungicide) and parathion (organophosphorus insecticide) on the fungal enzyme was compared with the effect of nikkomycin (nucleoside-peptide antibiotic).

Descriptors/Keywords: COPRINUS-CINEREUS, COPRINUS-LAGOPUS, INSECT, DIMILIN, CAPTAN, KITAZIN P, PARATHION, NIKKOMYCIN, INSECTICIDE, FUNGICIDE

Record - 166

BRITHWAITE, J. R., G. M. BOOTH, AND L. ROBINSON. 1976. FIELD EFFICACY OF TWO ORGANOPHOSPHATES [IMIDAN (N-MERCAPTOMETHYL) PHTHALIMIDE S-(O, O-DIMETHYL PHOSPHOROTHIOATE) AND SIMITHION (O, O-DIMETHYL)-(4-NITRO-M-TOLYL) PHOSPHOROTHIOATE)] AND AN INSECT GROWTH REGULATOR [DIMILIN 25W (A 25% WETTABLE)]. SCI. BIOL. JOUR. 2(5): 170-179

Record - 167

EFFECTS OF DIFLUBENZURON AND BAY-SIR-8514 ON BENEFICIAL INSECTS
ASSOCIATED WITH PEACH

BROADBENT A B; PREE D J

ENVIRON ENTOMOL 13 (1). 1984. 133-136.

Full Journal Title: Environmental Entomology

Language: ENGLISH

ABSTRACT

The insect growth regulators (IGRs) diflubenzuron and BAY SIR 8514 were evaluated for their effects on 3 beneficial insect species associated with peach: *Chrysopa oculata* Say (Neuroptera: Chrysopidae), *Acholla multispinosa* DeGeer (Hemiptera: [Heteroptera] Reduviidae), and *Macrocentrus ancylicivorus* (Rohwer) (Hymenoptera: Braconidae). Both topical treatment and contact with IGR-treated leaves caused significant mortality and inhibition of molting of 1st-instar *C. oculata*. These same treatments had no such effects on 1st-instar *A. multispinosa*. IGR-treated prey fed to *C. oculata* or *A. multispinosa* had no adverse effects on these predators. Diflubenzuron and BAY SIR 8514 both reduced the emergence of *M. ancylicivorus* adults from treated *Grapholitha molesta* (Busck) larvae that had successfully pupated. Addition of BAY SIR 8514 to the diet of adult *M. ancylicivorus* reduced parasitism of oriental fruit moth 4-fold.

Descriptors/Keywords: GRAPHOLITHA-MOLESTA, MACROCENTRUS-ANCYLIVORUS,
ACHOLLA-MULTISPINOSA, CHRYSOPA-OCULATA, INSECT GROWTH REGULATOR, MOLTING

Record - 168

EFFECTS OF DIFLUBENZURON AND BAY-SIR-8514 ON THE ORIENTAL FRUIT MOTH
GRAPHOLITHA MOLESTA LEPIDOPTERA OLETHREUTIDAE AND THE OBLIQUE-BANDED
LEAF-ROLLER CHORISTONEURA ROSACEANA LEPIDOPTERA TORTRICIDAE

BROADBENT A B; PREE D J

J ECON ENTOMOL 77 (1). 1984. 194-197.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

The insect growth regulators (IGR) diflubenzuron and BAY SIR 8514 [N-(((4-trifluoromethoxy)phenyl)amino)carbonyl)-2-chlorobenzamide] were evaluated for control of larvae of oriental fruit moth (OFM), *G. molesta* (Busck), and oblique-banded leafroller (OBLR), *C. rosaceana* (Harris), on peach. BAY SIR 8514 had greater ovicidal and larvicidal activity than diflubenzuron. For both compounds, mortality of OFM eggs was greater when eggs were laid on dried deposits than when eggs and substrate were treated. In the laboratory, BAY SIR 8514 was as toxic as phosmet to 1st- and 3rd-instar OBLR. In the field, BAY SIR 8514 performed as well as or better than phosmet against 1st- and 2nd-generation OFM larvae. There was no adverse effect of IGRs on parasitism of OFM by *Macrocentrus ancylicivorus* (Rohwer). Diflubenzuron showed residual efficacy of 10 to 14 days against 1st-instar OFM. Diflubenzuron was not strongly ovicidal; BAY SIR 8514 and phosmet were ovicidal against OFM for up to 7 days after treatment. BAY SIR 8514 is a promising agent for incorporation into an integrated pest management program for peaches.

Descriptors/Keywords: MACROCENTRUS-ANCYLIVORUS, PEACH, PHOSMET, OVICIDE,
INSECTICIDE, INSECT GROWTH REGULATOR

Record - 169

OLIVE MOTH PRAYS OLEAE CONTROL BY NON-TOXIC MEANS

BROUMAS T; YAMVRIAS C; ANAGNOU M

CAVALLORO, R. AND A. CROVETTI (ED.). INTEGRATED PEST CONTROL IN

OLIVE-GROVES; CEC (COMMISSION OF THE EUROPEAN COMMUNITIES)/FAO (FOOD AND AGRICULTURE ORGANIZATION)/IOBC (INTERNATIONAL ORGANIZATION FOR BIOLOGICAL CONTROL) INTERNATIONAL JOINT MEETING, PISA, ITALY, APR. 3-6, 1984. XIII+512P. A. A. BALKEMA: ROTTERDAM, NETHERLANDS; BOSTON, MASS., USA (DIST. IN USA AND CANADA BY A. A. BALKEMA PUBLISHERS: ACCORD, MASS., USA). ISBN 90-6191-609-7. 0 (0). 1985 . 259-264.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: BACILLUS-THURINGIENSIS, DIFLUBENZURON, INSECT GROWTH REGULATOR

Record - 170

BROWN, H. L. AND J. B. DIMOND. 1976. EFFECTS OF AERIAL APPLICATIONS OF DIMILIN ON VERTEBRATE ANIMALS IN A BOREAL FOREST. UNPUBLISHED STUDY RECEIVED APR. 7, 1976 UNDER I48-I259, PREPARED BY UNIV. OF MAINE, LIFE SCIENCES AND AG. EXPER. STATION, DEPT. OF ENTOMOLOGY, SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 171

EFFECT OF DIFLUBENZURON ON THE GYPSY MOTH EGG PARASITE OOENCYRTUS KUVANAE HYMENOPTERA ENCYRTIDAE

BROWN M W; RESPICIO N C

MELSHEIMER ENTOMOL SER 0 (31). 1981. 1-7.

Full Journal Title: Melsheimer Entomological Series

Language: ENGLISH

ABSTRACT

Effects of diflubenzuron on *O. kuvanae* (Howard) were tested in the laboratory. The parasites were exposed to egg masses topically treated with diflubenzuron and to eggs from *Lymantria dispar* (L.) (Lepidoptera:Lymantriidae) adults which were treated, as larvae, with sublethal concentrations. In both cases, there was no effect on the number of progeny produced, developmental time or sex ratio of the progeny. At the higher concentrations of diflubenzuron, the mortality rate of adult parasites increased slightly. Field data confirmed there was no measurable effect of diflubenzuron on parasitism by *O. kuvanae*. Use of diflubenzuron and *O. kuvanae* would be compatible control tactics in a gypsy moth pest management program.

Descriptors/Keywords: LYMANTRIA-DISPAR, PEST MANAGEMENT, PROGENY, DEVELOPMENT, MORTALITY

Record - 172

BROWN., P. L. , R. W. LANGDON, AND R. B. MOORE. 1975. EFFECTS OF DIMILIN ON STREAM PLANKTON. IN: REPORT STATE UNIV. OF NEW YORK, LAKE ONTARIO ENVIRONMENTAL LAB.

Record - 173

INDUCTION OF RESISTANCE TO INSECT GROWTH REGULATORS

BROWN T M; DEVRIES D H; BROWN A W A

J ECON ENTOMOL 71 (2). 1978 223-229.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Laboratory colonies of *Culex pipiens pipiens* L., *Tribolium confusum* Jacquelin duVal and

Oncopeltus fasciatus (Dallas) were submitted to selection pressure at the EC60 [effective concentration to kill 60% of the population] level in each generation; 7 different JH [juvenile hormone] mimics and diflubenzuron were thus investigated for their liability to induce resistance. For each insect, test methods for assessing their susceptibility levels were developed to trace development of resistance. Methoprene induced resistance in *C. p. pipiens*, and tolerance in the 2 other spp. Triprene induced resistance in *C. p. pipiens* and hydroprene induced it in *T. confusum*. Diflubenzuron induced a modest resistance in *C. p. pipiens* and *T. confusum* while Stauffer R-20458 [1(4-ethylphenoxy)-6,7-epoxy-3,7-dimethyl-2-octene] and Hoffmann-LaRoche Ro-20-3600 [6,7-epoxy-3,7-dimethyl-1-(3,7-methylenedioxy)phenoxy-2-nonene] did not. Stauffer R-20458 and kinoprene induced tolerance in *O. fasciatus*. The methoprene-resistance developed in *C. p. pipiens* was at first handicapped by a greatly reduced reproductive system, but after 40 generations of pressure and the attainment of a 100-fold resistance, the reproductive success had returned to normal. This resistance showed polyfactoral inheritance and extended in cross-resistance to 5 other JH mimics but not to diflubenzuron nor to conventional insecticides.

Descriptors/Keywords: CULEX-PIPIENS-PIPIENS, TRIBOLIUM-CONFUSUM, ONCOPELTUS-FASCIATUS, METHOPRENE, TRIPRENE, HYDROPRENE, DIFLUBENZURON, KINOPRENE, STAUFFER R-20458 1-4 ETHYLPHENOXY-6 7-EPOXY-3 7-DIMETHYL-2 OCTENE, RO-20-3600 6 7 EPOXY-3 7-DIMETHYL-1-3 7-METHYLENEDIOXYPHENOXY-2 NONENE, JUVENILE HORMONE MIMICS

Record - 174

BUCHI, R. 1983. USE OF DIMILIN AGAINST COCKCHAFERS TO AVERT CROP INJURIES INFLICTED BY THEIR LARVAE (SWITZERLAND). MITTEILUNGEN FUR DIE SCHWEIZERISCHE LANDWIRTSCHAFT 31(1.2): 64-67.

Record - 175

BUCHI, R., AND W. JOSSI. 1979. EFFECTS OF THE INSECT GROWTH REGULATOR DIMILIN (DIFLUBENZURON) ON THE COCKCHAFER MELOLONTHA MELOLONTHA L. AND GASTROIDEA VIRIDULA DEG. MITTEILUNGEN. BULLETIN. SCHWEIZERISCHE ENTOMOLOGISCHE GESELLSCHAFT 52(1): 75-81.

Record - 176

BUCHI, R. 1978. OVICIDAL AND LARVICIDAL EFFECTS OF DIMILIN AGAINST THE EUROPEAN CORN BORER, OSTRINIA NUBILALIS (HBN). Z ANGEW ENTOMOL 86(1): 67-71, ENG. SUMMARY.

Record - 177

BUCKNER, C. H., B. B. MCLEOD, AND P. D. KINGSBURY. 1975. THE EFFECT OF AN EXPERIMENTAL APPLICATION OF DIMILIN (R) UPON SELECTED FOREST FAUNA. (AL) OTTAWA: CHEMICAL CONTROL RESEARCH INSTITUTE, 26P. ID NO. 77-9683374. BOOK CIT: 77007620.

Record - 178

BUEI, K., AND H. OKABE. 1977. LABORATORY AND FIELD EVALUATIONS OF THE INSECT GROWTH REGULATOR, DIFLUBENZURON, AGAINST SYNANTHROPIC FLIES MUSCA DOMESTICA, PHORMIA REGINA, ALDRICHINA GRAMANI. BOTYU KAGAKU 42:176-180. ENGLISH SUMMARY.

Record - 179

FIELD DEPOSIT PATTERNS OF A DIFLUBENZURON SPRAY MIX AFTER APPLICATION TO

AN APPLE ORCHARD USING AN AIR-BLAST SPRAYER AND A LABORATORY EVALUATION OF PHYSICAL PROPERTIES AND ATOMIZATION CHARACTERISTICS

BUISMAN P; SUNDARAM K M S; SUNDARAM A; TRAMMEL K

J ENVIRON SCI HEALTH PART B PESTIC FOOD CONTAM AGRIC WASTES 24 (4). 1989. 389-412.

Full Journal Title: Journal of Environmental Science and Health Part B

Pesticides Food Contaminants and Agricultural Wastes

Language: ENGLISH

ABSTRACT

Diffubenzuron (DFB) was applied to an apple orchard in Sodus, Wayne County, N.Y., USA, at the rate of 280 g active ingredient (AI) (or 1120 g of Dimilin WP-25) in 1430 L/ha, using an air-blast sprayer. Deposits were collected at ground level on target site and along downwind direction in the off-target region, for assessment of droplet spectra and DFB content, before and after treatment. Physical properties, viz., viscosity at variable shear rates, surface tension, volatility and liquid-atomization characteristics were also investigated for the spray mix under laboratory conditions. About 39% of the applied amount was deposited at ground level of the treated region. Deposits on the off-target areas decreased extremely rapidly with downwind distance; recovery was about 3% at 15.24 m but reached a level below the detection limit beyond 60 m from the treated area. Droplet frequency (no./cm²) values showed a corresponding decrease. The DFB content of the spray mix, prior to and after treatment showed levels within 7% from the theoretical value of 280 g AI in 1430 L. The data on physical properties and liquid-atomization showed close similarity to those of water and were unlike those of a spray mix containing a "drift-retardant" adjuvant.

Descriptors/Keywords: INSECTICIDE, AGRICULTURE, CROP INDUSTRY

Record - 180

EFFECTS OF PESTICIDES ON TRICHOGRAMMA-SPP

BULL D L; COLEMAN R J

SOUTHWEST ENTOMOL SUPPL 0 (8). 1985). 156-168.

Full Journal Title: Southwestern Entomologist Supplement

Language: ENGLISH

ABSTRACT

Adult stages of Trichogramma species are generally highly susceptible to most broad-spectrum chemical insecticides. In contrast, immature stages of the parasite developing within host eggs apparently are well protected from even the most toxic compounds. However, with some pesticides there are deleterious effects when pharate adults try to emerge from the host egg. Among the chemical insecticides evaluated, these parasites are generally most susceptible to compounds such as carbaryl, methyl parathion, permethrin, and oxydemeton-methyl. They are relatively tolerant of compounds such as endosulfan and thiodicarb, as well as chlordimeform and methomyl when the latter are used at recommended ovicidal rates. The parasites are applied in the absence of crop oil. Unfortunately, the oil must be included for diflubenzuron to be fully effective against the boll weevil, *Anthonomus grandis* Boheman, and crop oils have a highly deleterious effect on the parasites (at least on *Trichogramma pretiosum* Riley). Microbial pesticides are fully compatible with *Trichogramma* spp. It is conceivable that *Trichogramma* releases could be integrated with applications of certain pesticides, but only under carefully controlled conditions. The most likely use of this biological control procedure is in cropping systems where insecticides are absent or are used only sparingly.

Descriptors/Keywords: ANTHONOMUS-GRANDIS, TRICHOGRAMMA-PRETIOSUM, CARBARYL, METHYL PARATHION, PERMETHRIN, OXYDEMETON METHYL, ENDOSULFAN, METHOMYL, THIODICARB, CHLORDIMEFORM, DIFLUBENZURON, MICROBIAL PESTICIDE

Record - 181

FATE OF DIFLUBENZURON AFTER APPLICATION TO COTTON AND THE BOLL WEEVIL
ANTHONOMUS GRANDIS

BULL D L

SOUTHWEST ENTOMOL 0 (SUPPL. 1). 1980. 2-7.

Full Journal Title: Southwestern Entomologist

Language: ENGLISH

ABSTRACT

Very little diflubenzuron is absorbed by the leaves of cotton plants treated by foliar application. This compound adheres well to foliage and is highly resistant to photodegradation on foliar surfaces and to metabolism within leaves. This unusual persistence of diflubenzuron on cotton does not result in the accumulation of significant residues in seeds. The chemical is stable in soil as long as it is associated with plant litter, and it does not leach appreciably. Diflubenzuron is active against female boll weevils exposed by either ingestion or contact. It inhibits the hatch of eggs of exposed females if sufficient concentrations are secreted into the eggs. As time after exposure is extended, treated females recover fertility, and retreatment is required to maintain a significant suppression of egg hatch.

Descriptors/Keywords: LEAF ABSORPTION, PHOTO DEGRADATION, METABOLISM, SEED RESIDUE, LEACH, EGG HATCH FERTILITY

Record - 182

ACTIVITY AND FATE OF DIFLUBENZURON AND CERTAIN DERIVATIVES IN THE BOLL
WEEVIL ANTHONOMUS GRANDIS

BULL D L; IVIE G W

PESTIC BIOCHEM PHYSIOL 13 (1). 1980. 41-52.

Full Journal Title: Pesticide Biochemistry and Physiology

Language: ENGLISH

ABSTRACT

Adult female boll weevils (*A. grandis* Boheman) were treated topically or fed treated diets containing either diflubenzuron (N-[[[(4-chlorophenyl)amino]carbonyl]-2,6-difluorobenzamide) or 2 of its hydroxylated derivatives or methylated analogs of these 3 chemicals. Only diflubenzuron and N-methyl diflubenzuron inhibited the hatch of eggs laid by the treated insects. Comparative studies of the fate of ¹⁴C-labeled diflubenzuron (I), N-methyl diflubenzuron (IV), 2-methoxy-N-methyl diflubenzuron (VII), and 3-methoxy-N-methyl diflubenzuron (VIII) after topical treatment (1 .mu.g each) of female boll weevils demonstrated the following: the 4 chemicals were absorbed, metabolized and excreted at different rates in order IV > VII, VIII > I; the chemicals were secreted into eggs and initial concentrations of 2.24 (I), 2.82 (IV), 1.47 (VII) and 0.93 ppm (VIII) at 4 days post-treatment declined progressively in subsequent samples; and concurrent daily observations indicated that inhibition of egg hatch by I and IV seemed to diminish rapidly when their concentrations in eggs declined to .apprx. 1.0 ppm or lower.

Descriptors/Keywords: N METHYL DIFLUBENZURON, 2 METHOXY-N-METHYL DIFLUBENZURON, 3 METHOXY-N-METHYL DIFLUBENZURON, EGG HATCH INHIBITION

Record - 183

FATE OF POTASSIUM 3,4-DICHLORO-5-ISOTHIAZOLECARBOXYLATE IN SOIL

BULL D L; SHAVER T N

J AGRIC FOOD CHEM 28 (5). 1980. 982-985.

Full Journal Title: Journal of Agricultural and Food Chemistry

Language: ENGLISH

ABSTRACT

In the laboratory, ¹⁴C-labeled potassium 3,4-dichloro-5-isothiazolecarboxylate ([¹⁴C]PDIC) was relatively stable over an extended period in 3 different soils (construction sand, Lufkin fine sandy

loam and Houston clay). At 6 mo. posttreatment, respective recoveries of the parent compound were 81, 92 and 83% of the applied dose. A single decomposition product was detected and tentatively identified as 3,4-dichloroisothiazole (the decarboxylated derivative of PDIC). In the laboratory, comparative tests indicated that PDIC and acephate (O,S-dimethyl acetylphosphoramidothioate) leached readily in the same 3 soils and in Michigan muck, while diflubenzuron (N-[[[4-chlorophenyl]-amino]carbonyl]-2,6-difluorobenzamide) was essentially immobile. Postharvest residues in the soil of a plot used for treatment of cotton with [¹⁴C]PDIC (single application of 1.12 kg/ha) declined to < 0.1 ppm after 1 yr, and residues of radiocarbon in rotational crops were insignificant.

Descriptors/Keywords: COTTON, DIFLUBENZURON, GROWTH REGULATOR, ACEPHATE, 3 4 DI CHLORO ISO THIAZOLE, LEACHING

Record - 184

SELECTIVE METHODS FOR MANAGING INSECT PESTS OF COTTON

BULL D L; HOUSE V S; ABLES J R; MORRISON R K

J ECON ENTOMOL 72 (6). 1979. 841-846.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

In replicated tests in small field plots of cotton, applications of a commercial formulation of *Bacillus thuringiensis* Berliner (BT) (1121 g/ha) did not adequately suppress heavy populations of *Heliothis* spp. larvae. When chlordimeform (140 g/ha) was applied in conjunction with this same dose, the level of control increased but did not exceed that provided by chlordimeform alone. Direct comparisons of the efficacy of the BT formulation (561 g/ha) and a commercial formulation of *Baculovirus heliothis* (BH) (148 g/ha) against *Heliothis* spp. indicated that the materials provided comparable levels of control against moderate populations of larvae. When the BH formulation (148 g/ha) or the BT formulation (560 g/ha) was applied in conjunction with release of *Trichogramma* (110,000/ha) in test plots oversprayed with diflubenzuron (70 g + 4.7 l crop oil/ha) to control boll weevils, *Anthonomus grandis grandis* Boheman, the 2 microbial pesticides caused a similar and significant reduction (compared with the check) in the numbers of both small and large *Heliothis* spp. larvae. Numbers of undamaged bolls were also significantly greater in microbial-treated plots.

Descriptors/Keywords: BACILLUS-THURINGIENSIS, HELIOTHIS-SPP, BACULOVIRUS, TRICHOGRAMMA, ANTHONOMUS-GRANDIS-GRANDIS, DIFLUBENZURON, INSECT GROWTH REGULATOR, CHLORDIMEFORM, INSECTICIDE, PARASITE

Record - 185

FATE OF DIFLUBENZURON IN COTTON SOIL AND ROTATIONAL CROPS

BULL D L; IVIE G W

J AGRIC FOOD CHEM 26 (3). 1978 515-520.

Full Journal Title: Journal of Agricultural and Food Chemistry

Language: ENGLISH

ABSTRACT

¹⁴C-labeled diflubenzuron (N-[[[4-chlorophenyl]amino]carbonyl]-2,6-difluorobenzamide), an insect growth regulator, was applied to field-grown cotton either as a single dose (100 .mu.g/leaf) for studies of absorption and metabolism or 6 and 10 .times. (each treatment at a rate equivalent to 70 g of AI [active ingredient] in 9.35 l of crop oil and 93.5 l of water/ha) for studies of radioactive residues in different parts of cotton plants at harvest and in soil and rotational crops. In cotton leaves treated with a single dose, there was little (< 5%) photodegradation of diflubenzuron on the surfaces or metabolism within cotton leaves through 4 wk post-treatment. The chemical was poorly absorbed (accumulation in leaves of < 7% in 3-4 wk), and losses to volatilization or weathering were minimum (<50% in 4 wk) in samples that were not exposed to rain. Radioactive residues were low in mature seeds of cotton treated 6 or 10

times. with 14C-labeled diflubenzuron (< 0.01 and .apprx. 0.02 ppm, respectively) and, although detected, were generally low in rotational crops, especially in edible portions. Postharvest residues of diflubenzuron in soil were persistent during the subsequent winter and spring months, but declined rapidly with onset of high summer temperatures.

Descriptors/Keywords: INSECT GROWTH REGULATOR, SEASONAL EFFECTS, TEMPERATURE EFFECTS

Record - 186

IDENTIFICATION AND CONTROL OF FOLIAR PESTS OF AMERICAN JOINTVETCH
AESCHYNOMENE AMERICANA

BULLOCK R C; KRETSCHMER A E JR

FLA ENTOMOL 65 (3). 1982. 335-339.

Full Journal Title: Florida Entomologist

Language: ENGLISH

ABSTRACT

American jointvetch, *A. americana* L., a component of grass-legume pastures in Florida [USA] is subject to attack by the noctuid defoliators *Selenis monotropa* Grote, the velvetbean caterpillar, *Anticarsia gemmatilis* Huebner, the tobacco budworm, *Heliothis virescens* (F.) and the gelechiid leafbinder, *Evippe* sp. Some biological control is provided by the spiders *Misumenops celer* (Hentz) and *M. bellulus* (Banks), the parasitic wasp *Euplectrus comstockii* Howard and the entomophagous fungus *Nomuraea rileyi* (Farlow) Samsom. Five insecticides were evaluated for pest control. Diflubenzuron permitted the fewest caterpillars and least leafbinding. Less effective were chlorpyrifos, triflumuron, Upjohn U-47319 (methyl N-[[[[[(diethoxyphosphinothioyl) isopylamino]thio]methylamino]carbonyl]oxy]ethanimidothioate), and trichlorfon. Reduction in leafbinding can improve seed production by as much as 350%.

Descriptors/Keywords: SELENIS-MONOTROPA, ANTICARSIA-GEMMATALIS, HELIOTHIS-VIRESCENS, EVIPPE-SP, MISUMENOPS-CELER, MISUMENOPS-BELLULUS, EUPLECTRUS-COMSTOCKII, NOMURAEA-RILEYI, DIFLUBENZURON, CHLORPYRIFOS, TRIFLUMURON, UPJOHN U-47319, TRICHLORFON, FLORIDA USA

Record - 187

ACTIVITY OF INSECT GROWTH REGULATORS VERSUS CITRUS RUST MITE IN FLORIDA USA

BULLOCK R C; MCCOY C W

91ST ANNUAL MEETING OF THE FLORIDA STATE HORTICULTURAL SOCIETY, MIAMI BEACH, FLA., USA, NOV. 7-10, 1978. PROC FL STATE HORTIC SOC 91 (0). 1978 (1979). 72-74.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: PHYLLOCOPTRUTA-OLEIVORA, HEXADECYLCYCLO PROPANE CARBOXYLATE, ZARDEX, DIFLUBENZURON, DIMILIN, FRUIT INFESTATION, PEST DENSITY

Record - 188

ATTRACTIVENESS AND CONTROL OF ATTA CAPIGUARA GONCALVES 1944 HYMENOPTERA FORMICIDAE BY DIFLUBENZURON BAITS

BUSOLI A C; FERNANDES O A; SHIWA S; SOUZA A J D

AN SOC ENTOMOL BRAS 21 (1). 1992. 29-39.

Full Journal Title: Anais da Sociedade Entomologica do Brasil

Language: PORTUGUESE

ABSTRACT

The objective of this trial was to study the attractiveness of diflubenzuron baits (6, 12, 20 e 40 ppm) in comparison to MirexR (0.45% of dodecacloro). It was carried out at Paraguacu Paulista, SP, in 1986/1987. The dosage was 10g/m² anthill and the experimental design was randomized blocks with 6 treatments and 8 replications. The baits were placed in line of the way out. The samplings were made weekly and were based in observations of ants movements during 5 min. All treatments were efficient in attractiveness and control of *A. capiguara*. Diflubenzuron (40 ppm) controlled earlier than the other baits.

Descriptors/Keywords: MIREX, ANT MOVEMENT

Record - 189

BUSVINE, J. R., Y. RONGSRIYAM, AND D. BRUNO. 1976. EFFECTS OF SOME INSECT DEVELOPMENT INHIBITORS ON MOSQUITO LARVAE. PESTICIDE SCIENCE 7(2): 153-160.

Record - 190

BYKHOVETS, A. I., R. N. M. ZOLOTAR, AND T. I. KULIKOVA. 1984. TOXIC ACTION OF DIFLUBENZURON ON CODLING MOTH LASPEYRESIA POMONELLA. KHINIIA V SEL'SKOM KHOZIAISTVE, 1984 (1):31-34.

Record - 191

EVALUATION OF 3 SELECTED INSECTICIDES FOR CONTROL OF THE SOUTHWESTERN CORN BORER DIATRAEA GRANDIOSELLA IN FIELD CORN

BYNUM E D JR; WARD C R; ARCHER T L

SOUTHWEST ENTOMOL 5 (2). 1980. 128-132.

Full Journal Title: Southwestern Entomologist

Language: ENGLISH

ABSTRACT

In 1976, aerial applications of monocrotophos at rates of 1.12 and 2.24 kg AI[active ingredient]/ha and carbaryl in molasses at 1.68 kg AI/ha effectively reduced southwestern corn borer (SWCB) infestations on tasseled corn. Plots treated with monocrotophos had significantly fewer larval infested, girdled and lodged plants than plots that were treated with carbaryl or untreated. In 1977, larval densities were reduced by ground applications of diflubenzuron at 0.13 kg AI/ha and by carbaryl in molasses at 1.68 kg AI/ha. All chemically treated plots had fewer plants lodged than untreated plots.

Descriptors/Keywords: MONOCROTOPHOS, CARBARYL, MOLASSES, DIFLUBENZURON

Record - 192

CALKINS, C. O., A. J. HILL, M. D. HUETTEL, AND E. R. MITCHELL. 1977. EFFECT OF DIFLUBENZURON ON PLUM CURCULIO CONOTRACHELUS NENUPHAR POPULATIONS IN LABORATORY AND FIELD TESTS. J. ECON. ENTOMOL. 70 (4): 463-466.

Record - 193

INCIDENTAL AND INDIRECT EXPOSURE TO 3 CHEMICAL INSECTICIDES USED FOR CONTROL OF THE GYPSY MOTH LYMANTRIA DISPAR

CAMERON E A; LOERCH C R; MUMMA R O

Z ANGEW ENTOMOL 99 (3). 1985. 241-248.

Full Journal Title: Zeitschrift fuer Angewandte Entomologie

Language: ENGLISH

ABSTRACT

The incidental and indirect exposure to 3 chemical insecticides used for control of the gypsy moth, *L. dispar* (L.), in camping and picnic areas in Pennsylvania, USA, was monitored on the day of application and weakly for 3 wk. Insecticides were applied at 1.12 kg AI[active ingredients]/ha (carbaryl and trichlorfon) or 35 g AI/ha (diflubenzuron). Pads, located on various parts of the bodies of test subjects [human], and used for swabbing picnic tables, were analyzed for residues. Even using figures for the greatest exposure recorded on the day of application, the dermal LD50 was greater by a factor of .apprx. 10,000. Greatly reduced pesticide recoveries were recorded with carbaryl in the weeks following applications; few pads with diflubenzuron were positive 7 days after pesticide application, and no residues of trichlorfon were recovered after the day of treatment.

Descriptors/Keywords: PENNSYLVANIA USA, HUMAN, CARBARYL, TRICHLORFON, DIFLUBENZURON

Record - 194

FIELD TRIAL OF EL-494 N-5-4 BROMOPHENYL-6-METHYL-2-PYRAZINYLAMINOCARBONYL-2 6-DICHLORO BENZAMIDE AGAINST THE GYPSY MOTH LYMANTRIA DISPAR IN CENTRAL PENNSYLVANIA USA

CAMERON E A; WALDVOGEL M G

MELSHEIMER ENTOMOL SER 0 (25). 1979. 1-5.

Full Journal Title: Melsheimer Entomological Series

Language: ENGLISH

ABSTRACT

EL-494 (N-[[[5-(4-bromophenyl)-6-methyl-2-pyrazinyl]amino]carbonyl]-2,6-dichlorobenzamide), one of the newly discovered class of molt disrupting chemicals, was applied by air against the gypsy moth, *L. dispar*, at rates of 1/2, 1, 2 and 6 oz AI in 2 gal HOH/ac [acre] (= 35, 70, 140 and 420 g AI in 22.47 l HOH/ha). Larval and pupal mortality, foliage protection and egg mass density in the succeeding generation were measured and compared with results in plots treated with Dimilin applied at 1 oz AI/ac (= 70 g AI/ha), and with untreated check plots. Post season egg mass density was reduced 66-100% compared with pre-season counts. EL-494 exhibits insecticidal activity against the gypsy moth.

Descriptors/Keywords: MOLT DISRUPTION, MORTALITY, FOILAGE PROTECTION, DIMILIN, EGG MASS DENSITY, INSECTICIDE

Record - 195

CANNIZZARO, R. 1978. DETERMINATION OF 2,6-DIFLUOROBENZOIC ACID RESIDUES IN CITRUS WHOLE FRUIT, PEEL, PULP AND PROCESS FRACTIONS, (OIL, FRUIT JUICE, MOLASSES, DRIED CITRUS PULP, PRESS LIQUOR, FINISHED PULP, CHOPPED PEEL, PEEL FRUIT, WASH AND EMULSION WATER) BY G. UNPUBLISHED STUDY RECEIVED DEC. 15, 1978 UNDER 148-EX-25, SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO.

Record - 196

CANNIZZARO, R. A. 1978. DETERMINATION OF DIFLUBENZURON, 4-CHLOROPHENYLUREA, AND 4-CHLOROANILINE IN CITRUS AND PROCESS FRACTIONS (JUICE, MOLASSES, PEEL FRUITS, DRIED PULP, PRESS LIQUOR, EMULSION WATER, PRE-WASH AND AFTER-WASH) BY GAS CHROMATOGRAPHY. METHOD NO. 22A, DATED DEC. 11, 1978. (UNPUBLISHED STUDY RECEIVED APR. 30, 1981 UNDER 148-1268, SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO.

Record - 197

CANNIZZARO, R. A. 1977. DETERMINATION OF DIFLUBENZURON (TH-6040), RESIDUES IN CITRUS (FOLIAGE, WHOLE FRUIT, PEEL AND PULP) AND PROCESS FRACTIONS (OIL, JUICE, MOLASSES, DRIED CITRUS PULP AND PRESS LIQUOR) BY GAS CHROMATOGRAPHY. METHOD NO. 22, DATED MAR 4, 1977. (UNPUBLISHED STUDY RECEIVED APR. 30, 1981 UNDER 148-1268, SUBMITTED BY THOMPSON HAYWARD-CHEMICAL CO.

Record - 198

CANNON, G., AND J., KRIZE. 1976. TH-6040 EGG TO EGG REPRODUCTION STUDY IN FATHEAD MINNOWS: LABORATORY NO. 5E-6094. UNPUBLISHED STUDY RECEIVED JUL. 19, 1976 UNDER 148-1262, PREPARED BY CANNON LABORATORIES, INC., SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 199

CONTROL OF A MUSHROOM INFESTING FLY DIPTERA SCIARIDAE WITH INSECTICIDES
APPLIED TO THE CASING LAYER

CANTELO W W

J ECON ENTOMOL 76 (6). 1983. 1433-1436.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

For chemical control of the sciarid fly, *Lycoriella mali* (Fitch), attacking the commercial mushroom crop only methoprene or malathion can be used as a treatment of the casing. Twenty-four chemicals were evaluated to find more effective materials and to determine lengths of activity and effects on a mushroom crop when used in commercial conditions. The LD95 of the more effective materials, based on ppm of dry weight of casing, was chlorpyrifos-56, diflubenzuron-120, dimethoate-88, ethoprop-81, methoprene-104, and SIR 8514-5. Methoprene, diflubenzuron and SIR 8514 did not reduce yields as casing treatments; chlorpyrifos and ethoprop did. Diflubenzuron and SIR 8514 when used at several time efficacious dosages had no deleterious effect on mushroom yield. A treatment of the casing with diflubenzuron or SIR 8514 should eliminate fly infestations from the casing for the entire cropping period.

Descriptors/Keywords: LYCORIELLA-MALI, SIR-8514, 2 CHLORO-N-4-TRIFLUOROMETHYLPHENYLAMINOCARBONYL, BENZAMIDE, ETHOPROP, CHLORPYRIFOS, DIMETHOATE, DIFLUBENZURON, METHOPRENE, PHYTO TOXICITY, YIELD, INSECT GROWTH REGULATOR

Record - 200

LYCORIELLA MALI CONTROL IN MUSHROOM COMPOST BY INCORPORATION OF
INSECTICIDES INTO COMPOST

CANTELO W W

J ECON ENTOMOL 72 (5). 1979. 703-705.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Six of 29 chemicals evaluated against a sciarid fly *L. mali* (Fitch), the major insect pest of commercial mushrooms, gave control equal to that of diazinon at lower doses. Those found to require less and their LD95 and LD50 (ppm), respectively, were: BAY SIR 8514 (2-chloro-N-[[[4-trifluoromethoxy)phenyl]amino]-carbonyl]benzamide) (0.4, 0.001); chlorpyrifos (11.0, 1.5); Lilly L-7063 (N-[[[5-(4-bromophenyl)-6-methylpyrazinyl]amino] carbonyl]-2-chlorobenzamide (21.2, 3.8); ethoprop (25.1, 12.3); dimethoate (37.9, 7.3) and diflubenzuron (49.2, 4.9).

Descriptors/Keywords: DIAZINON, BAY-SIR-8514 2 CHLORO-N-

4-TRIFLUOROMETHOXYPHENYLAMINO-CARBONYL BENZAMIDE, CHLORPYRIFOS,
LILLY L-7063 N 5-4 BROMOPHENYL-6-METHYLPYRAZINYLAMINOCARBONYL-2-CHLORO
BENZAMIDE, ETHOPROP, DIMETHOATE, DIFLUBENZURON

Record - 201

CARDINAL, H. AND G. VERNET. 1982. PHYSIOLOGICAL DISTURBANCE IN THE CRAB CARCINUS MEDITERANEUS INDUCED BY THE DIFLUBENZURON. COMTES RENDUS DES SEANCES DE LA SOCIETE DE BIOLOGIE ET DE SES FILIALES 176:210-216.

Record - 202

CARDINAL, H. G. VERNET AND G. SINEGRE. 1980. EFFECTS OF A GROWTH INHIBITOR DIFLUBENZURON ON A CRAB CARCINUS MEDITERRANEUS. C. R. SEANCES SOC. BIOL. FIL. 173(6): 1105-1108.

Record - 203

CARRIERE, B. D. 1976. NEW ERA IN INSECT STOMOXYS CALICITRANS, HAEMATOBIA IRRITANS CONTROL (DIMILIN). US AG. RESEARCH SVC. AGRIC RES. 25 (1):11.

Record -204

FEEDING 3 INSECT GROWTH REGULATORS TO WHITE LEGHORN HENS RESIDUES IN EGGS AND TISSUES AND EFFECTS ON PRODUCTION AND REPRODUCTION

CECIL H C; MILLER R W; CORLEY C

POULT SCI 60 (9). 1981. 2017-2027.

Full Journal Title: Poultry Science

Language: ENGLISH

ABSTRACT

Insect growth regulators were fed to mature White Leghorn hens at dietary levels 1-, 5-, 10- and 50-fold higher than the efficacy level for fly control. Feeding 10, 50, 100 and 500 ppm diflubenzuron, 2.5, 12.5, 25 and 250 ppm 6-azido-N-cyclopropyl-N'-ethyl-1, 3, 5-triazine-2,4-diamine (CGA-19255) and 50, 250, 500 and 2500 ppm 1-(8-methoxy-4,8-dimethylnonyl)-4-(1-methylethyl) benzene (AI3-36206) for 8 wk had no adverse effects on feed consumption, body weight, egg production, egg weight, egg shell thickness, fertility, hatchability or progeny performance. Diflubenzuron and AI3-36206 accumulated in the egg to levels .apprx. 0.04 and 0.004 dietary level, respectively, with a smaller accumulation in the liver and muscle. Diflubenzuron and AI3-36206 accumulated in the body fat to levels .apprx. 0.10 and 0.02 dietary level, respectively. After withdrawal from the diet (5 wk), diflubenzuron was not detectable in egg, liver, fat or muscle tissues of hens fed any level of the compound; hens fed the highest level of AI3-36206 had residues of this compound in body fat. Traces of AI3-36206 were also found in eggs of hens fed the 2 highest levels 5 wk after withdrawal. Residues of CGA-19255 were not detectable in eggs; and the eggs were not analyzed for residues of CGA-19255 metabolite, N-cyclopropyl-1,3,5-triazine-2,4,6-triamine (CGA-7266 2). Low levels of CGA-72662 were found in liver, body fat and muscle but CGA-72662 was not detectable in these tissues 1 wk after withdrawal of CGA-19255 from the diet.

Descriptors/Keywords: CHICKEN, FLY CONTROL DIFLUBENZURON, 6 AZIDO-N-CYCLOPROPYL-N'-ETHYL-1 3 5 TRIAZINE-2 4-DIAMINE, 1-8 METHOXY-4 8-DIMETHYLNONYL-4-1- METHYLETHYL BENZENE, LIVER, MUSCLE, WEIGHT, FAT, EGG PRODUCTION, FERTILITY

Record - 205

RESPONSE OF THE LARVAE AND PUPAE OF THE ORIENTAL RAT FLEA SIPHONAPTERA
PULICIDAE TO CHEMICALS OF DIFFERENT CHEMICAL TYPES

CHAMBERLAIN W F; MACIEJEWSKA J; MATTER J J

J ECON ENTOMOL 81 (5). 1988. 1420-1425.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Tests with 31 different compounds representing six chemical groups plus a miscellaneous group against larvae of the oriental rat flea, *Xenopsylla cheopis* (Rothschild), were used to define toxic action as indicated by the ratio of C (LC for larvae) divided by A (LC for pupae). An insect growth regulator (IGR) was distinguished by a high pupal-to-larval mortality ratio; i.e., when the C/A was < 2, the compound was not active as an IGR, but when the C/A was > 4, the compound acted as an IGR. The most active compound was a dodecadienoate, S-methoprene (isopropyl (2E, 4E)-11-methoxy-3,7,11-trimethyl-2,4-dodecadienoate (S)), which had an LC50 of 0.00011 ppm. With the addition of the R isomer, the LC50 doubled, but most strikingly, the C/A increased from 6 to 137. Two of the three diphenylureas acted as IGRs, whereas the third, diflubenzuron, acted as a larval toxicant, probably because of the activity on the moult from the second to third instar. All compounds tested were more toxic to the oriental rat flea than methoxychlor, and 80% were more active than carbaryl. Each compound exhibited a distinctive slope. Azadirachtin (SNEEM) showed an extremely flat slope, while the slope for phenthoate was very steep.

Descriptors/Keywords: XENOPSYLLA-CHEOPIS, TOXICITY, GROWTH REGULATOR, INSECTICIDE, DODECADIENOATE, S METHOPRENE, DIFLUBENZURON, METHOXYCHLOR, AZADIRACTIN, PESTS

Record - 206

TOXICITY OF DIFLUBENZURON AND PENFLURON TO IMMATURE STAGES OF APIS CERANA INDICA
F AND APIS MELLIFERA L

CHANDEL R S; GUPTA P R

APIDOLOGIE 23 (5). 1992. 465-473.

Full Journal Title: Apidologie

Language: ENGLISH

ABSTRACT

Diflubenzuron (DF) and penfluron (PF) in acetone were found to be equally toxic to *Apis mellifera* and *A. cerana indica* in topical application tests based on equivalent body weights. Toxicity resulting from median lethal dosage was highest for pupae and was lower for IV and III instar larvae. Acetone proved lethal to eggs, I and II instar larvae. There was no delayed lethal and morphological effect of the treatment on larvae, but some adult bees, treated in the same manner as pupae, showed morphological abnormalities, such as crumpled wings and poor interlocking at stylet and lancets of the sting apparatus. Feeding of 50 mg DF to small experimental colonies of both bee species enhanced egg laying but significantly reduced the amount of unsealed and sealed brood within 10 days of treatment.

Descriptors/Keywords: PESTICIDE, NON-TARGET ORGANISM, MEDIAN LETHAL DOSAGE, MORPHOLOGICAL ABNORMALITIES

Record - 207

EFFECTS OF SELECTED INSECT GROWTH REGULATORS ON LONGEVITY AND MORTALITY
OF CORN EARWORM AND FALL ARMYWORM LEPIDOPTERA NOCTUIDAE LARVAE

CHANDLER L D; PAIR S D; RAULSTON J R

J ECON ENTOMOL 85 (5). 1992. 1972-1978.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Laboratory bioassays demonstrated the toxic effects of three insect growth regulators (diflubenzuron, teflubenzuron, and fenoxycarb) to 1- and 7-d-old larvae of corn earworm *Helicoverpa zea* (Boddie), and fall armyworm, *Spodoptera frugiperda* (J. E. Smith). All compounds were effective against larvae of both species. Fenoxycarb was more active against 1- and 7-d-old corn earworm larvae compared with diflubenzuron or teflubenzuron; all compounds were equally active against 7-d-old fall armyworm larvae. Larvae exposed to fenoxycarb live up to 10 times longer than larvae treated with diflubenzuron or teflubenzuron. All three compounds might control the corn earworm and fall armyworm in agronomic crops.

Descriptors/Keywords: *HELICOVERPA-ZEA*, *SPODOPTERA-FRUGIPERDA*, INSECT, CROP INDUSTRY, SIGNIFICANCE PESTS, FENOXYCARB, DIFLUBENZURON, TEFLUBENZURON

Record - 208

CHANDRAN, V. R., AND M. V. MOORTHY. 1984. TOXICITY OF DIMILIN 25% WP TO LIVESTOCK FIELD EXPOSURE STUDY. ABSTRACT V ANNUAL CONFERENCE OF SOCIETY OF TOXICOLOGY (STOX) INDIA.

Record - 209

EVALUATION OF THE CHITIN INHIBITION BY DIFLUBENZURON AND PENFLURON IN THE FINAL INSTAR GRUBS OF SPOTTED LEAF BEETLE *HENOSEPILOACHNA VIGINTIOCTOPUNCTATA* FABRICIUS

CHANDRASEKHAR J; RAO P K; CHITRA K C

INDIAN J ENTOMOL 49 (3). 1987. 405-407.

Full Journal Title: Indian Journal of Entomology

Language: ENGLISH

ABSTRACT

Diflubenzuron and penfluron inhibited the chitin deposition in the final instar grubs of *H. vigintioctopunctata* more at higher concentrations (0.1 per cent) than at lower concentrations (0.075, 0.05, 0.025 and 0.01). Among the two chitin inhibitors, penfluron was more effective than diflubenzuron at 0.01 per cent concentration in the inhibition of chitin.

Descriptors/Keywords: PESTS, AGRICULTURE

Record - 210

EFFECTS OF DIFLUBENZURON AND PENFLURON ON VIABILITY OF HOUSE FLY *MUSCA DOMESTICA* EGGS

CHANG S C; BORKOVEC A B

J ECON ENTOMOL 73 (2). 1980. 285-287.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

¹⁴C-labeled diflubenzuron or penfluron injected into female *M. domestica* L. was deposited without degradation in the flies' eggs; as a result, hatch and F1 emergence were reduced. Eggs containing 10 pg/egg of either compound hatched normally but eggs containing .apprx. 680 pg/egg of diflubenzuron or 370 pg/egg of penfluron did not hatch. At equal doses, more penfluron than diflubenzuron was deposited in eggs, but the residues of both compounds increased with the dose and decreased in successive egg batches. The usefulness of this type of reproduction inhibitor depends not only on its intrinsic activity, but also on its metabolic and excretion characteristics.

Descriptors/Keywords: CARBON-14, LABEL, REDUCED EMERGENCE, DEGRADATION,

REPRODUCTION INHIBITOR, METABOLISM, EXCRETION

Record - 211

LABORATORY EVALUATION OF DIFLUBENZURON PENFLURON AND BAY-SIR-8514 AS FEMALE STERILANTS AGAINST THE HOUSE FLY MUSCA DOMESTICA

CHANG S C

J ECON ENTOMOL 72 (4). 1979. 479-481.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Relative potencies of diflubenzuron, penfluron and Bay Sir 8514 [2-chloro-N[[[4-(trifluoromethoxy)phenyl]amino]carbonyl]benzamide] were evaluated as female sterilants against *Musca domestica* L. by injection. Penfluron and Bay Sir 8514 were more than twice as potent sterilants as diflubenzuron. Penfluron was as potent or more potent than Bay Sir 8514. Female house flies injected with penfluron or Bay Sir 8514 remained sterile for more than 3 wk, but those injected with diflubenzuron regained fertility partially or completely 10 days posttreatment. All 3 compounds prevented egg hatch whether flies received the injection while they were virgins, after they were inseminated or after they had laid their 1st batch of eggs.

Descriptors/Keywords: 2 CHLORO-N-4-TRIFLUOROMETHOXYPHENYLAMINOCARBONYLBENZAMIDE, INSECT GROWTH REGULATOR, EGG HATCH, REPRODUCTIVE STATUS

Record - 212

CONJUGATION THE MAJOR METABOLIC PATHWAY OF CARBON-14 DIFLUBENZURON IN THE BOLL WEEVIL

CHANG S C; STOKES J B

J ECON ENTOMOL 72 (1). 1979. 15-19.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

The metabolic fate of ¹⁴C-diflubenzuron was studied after it was injected into *Anthonomus grandis* grandis Boheman. Four days posttreatment, recovery of ¹⁴C was 57.7% from treated weevils and 25% from the excreta. In the weevil, 57.3% of the ¹⁴C were recovered as unchanged diflubenzuron while 0.4% was recovered as conjugates. In the excreta, approximately 2% each of diflubenzuron and 2,6-difluorobenzamide were found and the remainder was conjugates. The total amount of conjugates was approximately 18.7%. Percentages were calculated on the basis of the total injected amount. The conjugates consist of 3 or more compounds, all of which were immediately excreted as very polar compounds. Upon acid hydrolysis, radioactive moieties from the conjugates were identified as N[(4-chloro-2-hydroxyphenyl)amino]carbonyl)-2,6-difluorobenzamide and N[(4-chlorophenyl)amino]carbonyl)-2,6-difluoro-3-hydroxybenzamide, plus 2 unknowns.

Descriptors/Keywords: ANTHONOMUS-GRANDIS-GRANDIS, EXCRETA, 2 6 DI FLUORO BENZAMIDE, ACID, HYDROLYSIS, N 4 CHLORO-2-HYDROXYPHENYLAMINOCARBONYL-2 6-DIFLUORO BENZAMIDE N-4 CHLOROPHENYLAMINOCARBONYL-2 6-DIFLUORO-3-HYDROXY BENZAMIDE

Record - 213

CONJUGATION THE MAJOR METABOLIC PATHWAY OF CARBON-14 DIFLUBENZURON IN THE HOUSE FLY

CHANG S C

J ECON ENTOMOL 71 (1). 1978 31-39.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Diflubenzuron, [N-([(4-chlorophenyl)amino]carbonyl)-2, 6-difluorobenzamide], uniformly labeled with carbon-14 in both rings, was used in the study of its metabolism in *Musca domestica* L. Seventy-two h after injection of 2684 dpm[disintegrations/m] per fly, the distribution of radioactivity was 78.4% in treated flies of which 74% was unchanged diflubenzuron and 4.4% was diflubenzuron conjugate, and 16.5% in the excreta of which all radioactivity was accounted for by diflubenzuron conjugates. Percentages were calculated on the basis of the total injected amount. Upon hydrolysis of the excreta extract in 1 N HCl at 80.degree. C for 3-5 h, the diflubenzuron conjugates yielded a single nonpolar compound that accounted for 70% of radioactivity and 1 unknown polar compound that accounted for 30% of radioactivity. This nonpolar compound isolated from acid hydrolysis of the excreta was identified as N-([(4-chloro-2-hydroxyphenyl]amino)carbonyl]-2,6-difluorobenzamide. The house flies were unable to cleave the diflubenzuron molecule between the carbonyl and amide groups of the urea bridge. The intact diflubenzuron molecule reacted at the 2 position of the aniline ring to form more than 1 conjugate with normal fly constituents, which were immediately excreted as polar compounds. The diflubenzuron conjugates were stable to alkaline conditions, soluble in water or acetonitrile, and insoluble in acetone.

Descriptors/Keywords: MUSCA-DOMESTICA, N-4 CHLOROPHENYLAMINOCARBONYL-2 6-DIFLUORO BENZAMIDE, INSECT GROWTH REGULATOR, N-4 CHLORO-2-HYDROXYPHENYLAMINOCARBONYL-2 6-DIFLUORO BENZAMIDE

Record - 214

CHANSIGAUD, J. 1977. SENSITIVITY OF THE SCHISTOCERCA GREGARIA (FORSK.) LARVAE TO DIFLUBENZURON. PHYTIATR PHYTOPHARM 26(4): 269-276.

Record - 215

PERSISTENCE OF DIFLUBENZURON AND BAY-SIR-8514 IN NATURAL AND STERILE SANDY LOAM AND ORGANIC SOILS

CHAPMAN R A; TU C M; HARRIS C R; HARRIS C

J ENVIRON SCI HEALTH PART B PESTIC FOOD CONTAM AGRIC WASTES 20 (5). 1985. 489-498.

Full Journal Title: Journal of Environmental Science and Health Part B Pesticides Food Contaminants and Agricultural Wastes

ABSTRACT

Disappearance rates of 10 ppm technical diflubenzuron (N(((4-chlorophenyl)amino)carbonyl)-2,6-difluorobenzamide, Dimilin) and BAY SIR 8514 (2-chloro-N(((4-Trifluoromethoxyphenyl)amino)carbonyl)benzamide) applied on quartz sand to natural sandy loam and muck soils were significantly greater than for the corresponding sterilized soils, eg. 47-51% vs. 68-87% BAY SIR 8514 and 2-12% vs. 80-87% diflubenzuron remaining at 12 wk, indicating that soil microorganisms play a major role in their degradation. Kinetic analysis of the data based on a first order dependence on the insecticide concentration showed that the rate constants for these disappearance reactions decreased with time.

Descriptors/Keywords: MICROORGANISMS, INSECTICIDES, PESTICIDE, DEGRADATION

Record - 216

EFFICACY OF ANTIMOLTANTS AGAINST POPLAR DEFOLIATOR ICHTHYURA ANASTOMOSIS AND SHISHAM DEFOLIATOR PLECOPTERA REFLEXA

CHAUDHRY M I; GUL H

PAK J FOR 35 (4). 1985 . 181-186.

Full Journal Title: Pakistan Journal of Forestry

Language: ENGLISH

ABSTRACT

Antimoultant insecticides, Alsystin and Dimilin 25% W.P. which inhibit chitin synthesis in insects were tried against 2nd and 3rd instar larvae of shisham [*Dalbergia sissoo*] defoliator, *Plecoptera reflexa* Guen. (Notodontidae). Both the chemicals in laboratory as well as field trials, in doses of 0.02 and 0.04% concentrations gave cent percent mortality of the larvae. The residual effect of the insecticides continued up to about one month and provided cover for two successive and overlapping generations. The non-target insects, which do not feed on foliage were absolutely safe from the adverse effect of the chemicals.

Descriptors/Keywords: DALBERGIA-SISSOO, ALSYSTIN, DIMILIN, INSECTICIDES, LARVAE MORTALITY

Record - 217

PURIFICATION AND CHARACTERIZATION OF CHITINASE EC-3.2.1.14 FROM THE STABLE FLY STOMOXYS CALCITRANS

CHEN A C; MAYER R T; DE LOACH J R

ARCH BIOCHEM BIOPHYS 216 (1). 1982. 314-321.

Full Journal Title: Archives of Biochemistry and Biophysics

Language: ENGLISH

ABSTRACT

Chitinase (EC 3.2.1.14) that appears as a single band by electrophoresis was purified from stable fly (*S. calcitrans*) pupae. The chitinase has no cation requirements for activity, and a broad pH optimum around 5. The MW of the chitinase, as determined by sodium dodecyl sulfate-polyacrylamide gel electrophoresis, is 48,000, and the isoelectric point is 4.85. Kinetic properties were determined using acetylated chitosan. The K_m is 33 mM and V is 1.21 $\mu\text{mol/min per mg protein}$. The insect growth regulator diflubenzuron had no effect on chitinase activity.

Descriptors/Keywords: CATION REQUIREMENT, PH OPTIMUM, MOLECULAR WEIGHT, ISO ELECTRIC POINT, KINETICS, DIFLUBENZURON, INHIBITOR, GROWTH REGULATOR

Record - 218

CHESTERMAN, H., R. HEYWOOD, M.H. BARKER, ET.AL. 1974. DU 112307: TOXICITY IN REPEATED DIETARY ADMINISTRATION TO BEAGLE DOGS (REPEATED ADMINISTRATION FOR 13 WEEKS). PDR169/74157; UNPUBLISHED STUDY RECEIVED FEB. 10, 1976 UNDER 6G1744, PREPARED BY HUNTINGDON RESEARCH CENTRE, SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 219

EFFECTS OF SUBLETHAL DOSES OF DIFLUBENZURON ON ENERGY BUDGET OF ERGOLIS MERIONE LEPIDOPTERA NYMPHALIDAE

CHOCKALINGAM S; KRISHMAN M

ENTOMON 9 (2). 1984. 121-126.

Full Journal Title: Entomon

Language: ENGLISH

Descriptors/Keywords: INSECT GROWTH REGULATOR

Record - 220

THE OVICIDAL EFFECT OF DIFLUBENZURON ON HEMIPTERAN BUGS DYSDERCUS CINGULATUS
AND CHRYSOCORIS PURPUREUS

CHOCKALINGAM S; NOORJAHAN A

CURR SCI (BANGALORE) 53 (20). 1984. 1112-1113.

Full Journal Title: Current Science (Bangalore)

Language: ENGLISH

Descriptors/Keywords: INSECT GROWTH REGULATOR

Record - 221

EFFECT OF DIMILIN AND ANALOGS 60-43 AND 60-44 ON THE LIFE STAGES OF
EUPROCTIS FRATERNA LYMANTRIIDAE LEPIDOPTERA

CHOCKALINGAM S; VASANTHA E

GEOBIOS (JODHPUR) 11 (3). 1984. 130-132.

Full Journal Title: GEOBIOS (Jodhpur)

Language: ENGLISH

Descriptors/Keywords: INSECT GROWTH REGULATOR, CHITIN SYNTHESIS, INHIBITOR

Record - 222

EFFECTS OF DIFLUBENZURON ON LARVAL DEVELOPMENT OF ZAPRINONUS PARAVITTIGER
DIPTERA DROSOPHILIDAE

CHOPRA P K; RUP P J

J ENTOMOL SCI 20 (1). 1985. 109-114.

Full Journal Title: Journal of Entomological Science

Language: ENGLISH

ABSTRACT

Feeding of diflubenzuron to different-aged larvae of banana fruitfly, *Z. paravittiger* (Godble and Vaidya), produced a differential susceptibility. The 1st-instar larvae were significantly more susceptible than the 2nd- and 3rd-instar larvae. The ID 50 (50% inhibitory dose) values for adult emergence were 0.16, 0.32 and 0.95 ppm for 1st-, 2nd-, and 3rd-instar larvae, respectively. The frequency of morphological abnormalities increased and F1 adults failed to reproduce. The total body glycogen increased and total body proteins decreased after feeding diflubenzuron to 2nd-instar larvae for 24 h.

Descriptors/Keywords: BANANA FRUITFLY

Record - 223

EFFECTS OF A CHITIN SYNTHESIS INHIBITOR INSECTICIDE ON CRAB LARVAE

CHRISTIANSEN M E

THIRD COLLOQUIUM ON MEDITERRANEAN DECAPOD CRUSTACEANS, BARCELONA, SPAIN,

MARCH 25, 1985. INVEST PESQ 51 (SUPPL. 1). 1987. 526-527.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: ABSTRACT, MOSQUITO, DIFLUBENZURON

Record - 224

EFFECT OF THE INSECT GROWTH REGULATOR DIFLUBENZURON DIMILIN ON THE UPTAKE
OF GLUCOSE AND N ACETYLGLUCOSAMINE INTO THE CUTICLE OF CRAB LARVAE

CHRISTIANSEN M E; GOSLING E; WILLIAMS M A

MAR BIOL (BERL) 83 (3). 1984. 225-230.

Full Journal Title: Marine Biology (Berlin)

Language: ENGLISH

ABSTRACT

Incorporation of ³H-labeled glucose and ³H-labeled N-acetylglucosamine (NAGA), both precursors to chitin, into the cuticle of *Rhithropanopeus harrisii* (Gould) larvae (Crustacea: Brachyura) was examined at different stages of the molt cycle in control larvae as well as in larvae treated with the insect growth regulator diflubenzuron. As far as the control larvae were concerned, the incorporation of both precursors was high at the postmolt stage when the endocuticle was secreted. NAGA appeared to be a more specific precursor of cuticular material than glucose during the premolt stage when exocuticle was produced. Incorporation of both precursors was low immediately before ecdysis and during the intermolt stage when secretion of the cuticle is complete. Incorporation of glucose into chitin was greatly inhibited by the pollutant during the postmolt stage when the endocuticle is produced. Incorporation of NAGA was reduced to a lesser extent at this stage. Diflubenzuron treatment markedly affected the incorporation of both NAGA and glucose in the premolt stage during secretion of the exocuticle.

Descriptors/Keywords: ENDOCUTICLE, MOLTING, ECDYSIS CHITIN, TRITIUM

Record - 225

**ULTRASTRUCTURAL STUDY OF THE EXOSKELETON OF THE ESTUARINE CRAB
RHITHROPANOPEUS HARRISII EFFECT OF THE INSECT GROWTH REGULATOR DIMILIN
DIFLUBENZURON ON THE FORMATION OF THE LARVAL CUTICLE**

CHRISTIANSEN M E; COSTLOW J D JR

MAR BIOL (BERL) 66 (3). 1982. 217-226.

Full Journal Title: Marine Biology (Berlin)

Language: ENGLISH

ABSTRACT

Ultrastructure of larval cuticle during the molt cycle of the estuarine crab *R. harrisii* (Crustacea: Brachyura) was studied in control larvae and 1st zoeal larvae exposed to 10 ppb of the insect growth regulator Dimilin (diflubenzuron). Dimilin 10 ppb was lethal to zoeal larvae of *R. harrisii*, and nearly all exposed larvae died during molting to the next stage. Distinct differences in structure of the cuticle were found between the 2 groups of larvae. Endocuticle and exocuticle were deformed in Dimilin-treated larvae, but formation of epicuticle was not affected. Dimilin probably inhibited chitin synthesis in crab larvae.

Descriptors/Keywords: CHITIN

Record - 226

CHRISTIANSEN, M. E. AND J. D. COSTLOW JR. 1980. PERSISTENCE OF THE INSECT GROWTH REGULATOR DIMILIN IN BRACKISH WATER: A LABORATORY USING LARVAE OF AN ESTINE CRAB AS INDICATOR. ZOOLOGICAL MUSEUM, UUNIV. OF OSLO, SARGT. 1 OSLO 5, NORWAY, DUKE UNIVERSITY MARINE LABORATORY, BEAUFORT, NORTH CAROLINA, 28516, USA, HELGOLANDER MEERESUNTERSUCHUNGEN 33: 327-332.

Record - 227

**EFFECTS OF THE INSECT GROWTH REGULATOR DIMILIN TH-6040 ON LARVAL
DEVELOPMENT OF 2 ESTUARINE CRABS**

CHRISTIANSEN M E; COSTLOW J D JR; MONROE R J

MAR BIOL (BERL) 50 (1). 1978. 29-36.

Full Journal Title: Marine Biology (Berlin)

Language: ENGLISH

ABSTRACT

Effects of Dimilin (TH 6040), an insect growth regulator which interferes with the formation of the insect cuticle, were studied on the larval development of *Rhithropanopeus harrisii* (Gould) and *Sesarma reticulatum* (Say) (Crustacea: Brachyura). When larvae were exposed to 0.5 (R. *harrisii* only), 1, 3, 5, 7 and 10 ppb Dimilin from hatching to the 1st crab stage, survival in both species decreased in relation to increased concentrations of Dimilin. Survival of R. *harrisii* larvae was significantly lower at 1 ppb and higher levels compared with control experiments, and in *S. reticulatum* a significant decrease in survival began at the 3 ppb level. At 10 ppb Dimilin, no larvae survived to the megalopa stage in either of the 2 spp. Early stage larvae of R. *harrisii* are more sensitive to Dimilin than those of *S. reticulatum*. When R. *harrisii* larvae were treated with 10 ppb Dimilin during the intermolt period of each of the 4 zoeal stages, nearly all larvae died during molting to the succeeding stage. First zoeal larvae of R. *harrisii* exposed to 10 ppb Dimilin at various days during the intermolt period were more sensitive to the compound late in the period. Dimilin may also interfere with the formation of the cuticle in crab larvae.

Descriptors/Keywords: RHITHROPANOPEUS-HARRISII, SESARMA-RETICULATUM, INSECTA, INSECT CUTICLE INHIBITOR, MEGALOPS, ZOEAL, INTER MOLT SURVIVAL

Record - 228

EFFECTS OF DIFLUBENZURON ON ALFALFA WEEVIL HYPERA POSTICA LARVAE AND ON TOXICITY OF METHIDATHION AND CARBOFURAN

CHU C-M; BRINDLEY W A

IOWA STATE J RES 55 (4). 1981. 387-392.

Full Journal Title: Iowa State Journal of Research

Language: ENGLISH

ABSTRACT

Increasing concentrations of diflubenzuron (Dimilin, TH-6040) in the diet of larval *H. postica* (Gyllenhal) led to reductions in survival, pupal weight and adult weight and to increases in developmental time. Diflubenzuron LC50 levels ranged from 102.5 ppm for 4 days of exposure to 14.0 ppm for 28 days of exposure. A dose of 10 ppm diflubenzuron reduced 24 and 48 h LC50 values for methidathion to 46% of the control value, while the same diflubenzuron exposure reduced carbofuran LC50 values to 64 and 81% of the control values for 24 and 48 h, respectively.

Descriptors/Keywords: DIMILIN, LARVAL DIET, LC-50, METHIDATHION

Record - 229

CIBRIAN TOVAR, J., A. LAGUNES, H. BRAVO, C. LLANDERAL. 1984. BIOLOGICAL ACTIVITY OF DIFLUBENZURON FOR EPILACHNA VARIVESTIS MULSANT (COLEOPTERA: COCCINELLIDAE) IN LABORATORY CONDITIONS. AGROCIENCIA 57:65-80.

Record - 230

CIBRIAN TOVAR, J. 1982. BIOLOGICAL ACTIVITY OF DIFLUROBENZENE (SIC) ON THE MEXICAN BEAN BEETLE UNDER LABORATORY CONDITIONS. XI, 87 LEAVES. ESCUELA NACIONAL DE AGRICULTURA (THESIS 1982; NO. 42).

Record - 231

DIFLUBENZURON AS A POSSIBLE TOOL FOR MANAGING INSECTICIDE-RESISTANT HORN FLIES DIPTERA MUSCIDAE

CILEK J E; KNAPP F W

J AGRIC ENTOMOL 8 (1). 1991. 7-16.

Full Journal Title: Journal of Agricultural Entomology

Language: ENGLISH

ABSTRACT

The use of diflubenzuron to manage horn fly [*Haematobia irritans*] populations resistant to pyrethroid and organophosphorus insecticides was investigated in southwestern Kentucky [USA] during 1986. Diflubenzuron boluses (Vigilante) were administered to two cattle herds which supported horn flies resistant to permethrin and stirofos. Although permethrin and stirofos resistance were variable in these horn fly populations, Diflubenzuron did not appear to exert additional selection pressure towards greater resistance to either insecticide. Diflubenzuron reduced the resistant adult horn fly populations by > 80% during the first 75 d of the study which was not consistently different from the reduction of insecticide-susceptible horn fly populations also bolused with diflubenzuron.

Descriptors/Keywords: HAEMATOBIA-IRRITANS, CATTLE, STIROFOS, TETRACHLORVINPHOS, PERMETHRIN, KENTUCKY USA

Record - 232

THE INHIBITION OF CHITIN SYNTHESIS IN SPODOPTERA LITTORALIS LARVAE BY FLUFENOXURON TEFLUBENZURON AND DIFLUBENZURON

CLARKE B S; JEWESS P J

PESTIC SCI 28 (4). 1990. 377-388.

Full Journal Title: Pesticide Science

Language: ENGLISH

ABSTRACT

The chitin precursor [¹⁴C]N-acetylglucosamine injected into the haemolymph of *Spodoptera littoralis* (Boisduval) larva was incorporated into the chitin exponentially with time. When caterpillars were injected with precursor at the commencement of feeding on acylurea-treated leaf discs, flufenoxuron, teflubenzuron and diflubenzuron were found to be equally effective inhibitors of chitin synthesis, measured after 21 h. The dose response curves by feeding are not parallel, indicating that the relative potency of the compounds will vary across the dose range. When chitin precursor was injected simultaneously with topically applied diflubenzuron, flufenoxuron or teflubenzuron, all three acylureas were found to be equally effective as inhibitors of chitin synthesis when measured after five hours. The LD_{50} values (50% inhibition of chitin synthesis) were not significantly different; average 600 ng, compared with LD_{50} values (50% lethal dose) of approx. 13 ng for flufenoxuron and teflubenzuron but 130 ng for diflubenzuron (topical application). Injection of precursor 24 h after topical application of insecticide gave an LD_{50} value which had dropped 670- and 150-fold for flufenoxuron and teflubenzuron respectively but only 20-fold for diflubenzuron. It is postulated that the reason for the low increase in diflubenzuron effectiveness with time was due either to less diflubenzuron than flufenoxuron reaching the site of action, or more probably, a faster rate of metabolism and excretion for diflubenzuron. The lower toxicity of diflubenzuron compared with flufenoxuron and teflubenzuron may not be due to any inherent differences in biochemical effectiveness, but rather to different penetration/metabolism properties.

Descriptors/Keywords: INSECT, CARBON-14, N ACETYLGLUCOSAMINE, INSECTICIDES, PESTS

Record - 233

FACTORS AFFECTING UPTAKE AND LOSS OF DIFLUBENZURON IN THE TSETSE FLY GLOSSINA MORSITANS MORSITANS DIPTERA GLOSSINIDAE

CLARKE L

BULL ENTOMOL RES 72 (3). 1982. 511-522.

Full Journal Title: Bulletin of Entomological Research

Language: ENGLISH

ABSTRACT

Interference with reproduction in *G. m. morsitans* Westw. by diflubenzuron depends on a variety of factors that influence its uptake and loss from the female fly. The duration of its effect depends on the site and method of application to the fly, as well as the amount of material applied. In nulliparous females, loss of diflubenzuron was by excretion, but as the fly aged, approximately 50% of the material remaining within the fly was lost with each larviposition. Following injection, the rate of loss of diflubenzuron by excretion was twice that from flies treated topically, but in neither was it directly related to the amount of diflubenzuron within the fly. Loss to the in utero larva, however, was governed by the amount of material within the fly, at least 9 ng diflubenzuron being necessary for production of an abnormal offspring. In injected flies, the overall loss was twice that from flies treated topically on the dorsal thorax and similar to those treated topically on the ventral abdomen. This difference in the rate of loss from topically-treated flies seems to be related to the amount of material available on the surface of the fly, the cuticle apparently acting as a storage site from which there is a gradual release of diflubenzuron into the fly.

Descriptors/Keywords: REPRODUCTION INTERFERENCE, METHOD OF APPLICATION

Record - 234

CLARKE, L. 1980. INSECT GROWTH REGULATORS: THEIR POSSIBLE ROLE FOR CONTROL OF GLOSSINA. (PROCEEDINGS, TRANS. R. SOC. TROP. MED. HYG. 74(2): 279-280.

Record - 235

CLARKE, L. G. H. R. TEMPLE, J. F. V. VINCENT. 1977. THE EFFECTS OF A CHITIN INHIBITOR-DIMILIN (INSECTICIDE) ON THE PRODUCTION OF PERITROPHIC MEMBRANE IN THE LOCUST, LOCUSTA MIGRATORIA. J. INSECT. PHYSIOL 23:241-246.

Record - 236

CLEMENT ASSOC, INC. 1977. SUBMISSION OF... ON RELATIVE RISKS OF DIMILIN AND ALTERNATIVE PESTICIDES. UNPUBLISHED STUDY RECEIVED MAR 15, 1978 UNDER 148-1259, SUBMITTED BY THOMPSON HAYWARD CHEM. CO., KANSAS CITY, KS.

Record - 237

EVALUATION OF TWO INSECT GROWTH REGULATORS FOR INSECT PEST CONTROL IN THE AUSTRALIAN MUSHROOM INDUSTRY

CLIFT A D; TERRAS M A

PLANT PROT Q 7 (2). 1992. 59-61.

Full Journal Title: Plant Protection Quarterly

Language: ENGLISH

ABSTRACT

Two Insect Growth Regulators (IGRs), triflumuron (Bay Sir 8514) and diflubenzuron, were evaluated for use in casing and compost against the mushroom sciarid, *Lycoriella mali* (Fitch) and white cecid *Heteropeza pygmaea* (Winnertz). Both IGRs showed considerable activity against sciarids when used at 35 mg Kg⁻¹ in casing and 10 mg Kg⁻¹ in compost, resulting in higher yields and less damage. However, neither showed sufficient activity against cecids unless combined with 0.01% maldison watered on weekly. Use of triflumuron, either alone or with maldison, resulted in the least yield loss compared to an uninfested control.

Descriptors/Keywords: LYCORIELLA-MALI, HETEROPEZA-PYGMAEA, AGARICUS-BISPORUS, TRIFLUMURON, DIFLUBENZURON, MALDISON, INSECTICIDE, FUNGUS, YIELD, AUSTRALIA

Record - 238

COMPARISON OF IN-VIVO AND IN-VITRO ACTIVITY OF 3 CHITIN SYNTHESIS
INHIBITORS

COHEN C F; MARKS E P

SOUTHWEST ENTOMOL 4 (4). 1979. 294-297.

Full Journal Title: Southwestern Entomologist

Language: ENGLISH

ABSTRACT

Two new experimental insecticides, BAY SIR 6874 and BAY SIR 8514, were compared with diflubenzuron for their in vivo inhibitory activity in 5 insect species and in vitro in the cockroach leg regenerate system. The BAY SIR compounds were as active as or more active than diflubenzuron in disrupting larval growth and development in all 5 spp. [the yellow fever mosquito, *Aedes aegypti* (L.), the confused flour beetle, *Tribolium confusum* Jacquelin duVal, the house fly, *Musca domestica* L., the tobacco hornworm, *Manduca sexta* (L.), the Indian meal moth, *Plodia interpunctella* (Huebner) and from the cockroach, *Leucophaea maderae* (F.)] of insects tested. Results of in vitro tests confirmed that these compounds were specific chitin synthesis inhibitors and were generally in agreement with the results of in vivo assays. Both BAY SIR compounds were as potent or more potent chitin synthesis inhibitors in this system than diflubenzuron at concentrations causing 75% inhibition.

Descriptors/Keywords: AEDES-AEGYPTI, TRIBOLIUM-CONFUSUM, MUSCA-DOMESTICA, MANDUCA-SEXTA, PLODIA-INTERPUNCTELLA, LEUCOPHAEA-MADERAE, BAY SIR-6874, BAY SIR-8514, DIFLUBENZURON, BAY SIR-6874, LARVAL GROWTH, CHITIN SYNTHESIS INHIBITORS

Record - 239

IN-VITRO CHITIN SYNTHESIS IN AN INSECT FORMATION AND STRUCTURE OF MICRO
FIBRILS

COHEN E

EUR J CELL BIOL 26 (2). 1982. 289-294.

Full Journal Title: European Journal of Cell Biology

Language: ENGLISH

ABSTRACT

Chitin microfibril synthesis in *Tribolium castaneum* chitin synthetase (CS) assays results in the formation of a considerable precipitate. Such precipitate does not appear in the absence of the CS substrate (uridine diphospho-N-acetyl-D-glucosamine) or in the presence of polyoxin D, a potent CS inhibitor. Diflubenzuron which blocks in vivo chitin synthesis in insects has no effect on the precipitate formation at a relatively high concentration (3 times 10^{-4} M). EM examination of the CS product reveals a network of long, parallel oriented microfibrils. The microfibrils vary in thickness from 10-80 nm. Thinner elements merge to form larger and thicker microfibrils which are packed in distinct bundles. Particles associated with the microfibrils are largely spheroidal and approx. 50-250 nm in diameter. Coiled fibroid structures enclosed inside particles were observed. Similar coiled structures or extended fibroids attached to the outside (shell) of particles were also found. The nature of the particles and their possible role in chitin synthesis and fibrillogenesis in insects are discussed.

Descriptors/Keywords: TRIBOLIUM-CASTANEUM, SYNTHETASE, DIFLUBENZURON, FIBRILLOGENESIS, URIDINE DI PHOSPHO-N-ACETYL-D GLUCOSAMINE, POLYOXIN D, ELECTRON MICROSCOPE

Record - 240

PROPERTIES AND INHIBITION OF INSECT INTEGUMENTAL CHITIN SYNTHETASE

EC-2.4.1.16

COHEN E; CASIDA J E

PESTIC BIOCHEM PHYSIOL 17 (3). 1982. 301-306.

Full Journal Title: Pesticide Biochemistry and Physiology

Language: ENGLISH

ABSTRACT

Chitin polymerization is catalyzed by cell-free enzyme complexes from the integument of *Trichoplusia ni* larvae and wing tissue of developing *Hyalophora cecropia* pupae obtained on extraction of homogenates for 16 h at 5.degree. C in 25 mM Tris-HCl buffer, pH 7.2, containing 10 mM MgCl₂, 1 mM dithiothreitol, 10 mg/ml bovine serum albumin and 4 mg/ml digitonin. In contrast, integumental preparations from *Boarmia selenaria*, *Earias insulana*, *Heliothis virescens*, *Oncopeltus fasciatus*, *Spodoptera exigua* and *Tribolium castaneum* exhibit little or no chitin synthetase (CS) activity. *H. cecropia* CS requires magnesium ions but not N-acetyl-D-glucosamine for normal activity and is almost insensitive to nikkomycin and polyoxin D. CS activity is not detected in diapausing *H. cecropia* pupae but synthesis of this enzyme is induced or its activity is stimulated by the molting hormone, ecdysterone, indicating possible hormonal control. *T. ni* CS requires magnesium ions and N-acetyl-D-glucosamine for optimal activity and is sensitive to inhibition by uridine di- and triphosphates, polyoxins B and D, and particularly nikkomycin. *T. ni* integumental CS activity decreases in starved larvae or those about to pupate. Both *T. ni* and *H. cecropia* CS enzymes as prepared and assayed are sensitive to captan but not to the potent insecticides diflubenzuron and BAY SIR 8514, 2 effective benzoylphenyl urea in vivo chitin synthesis inhibitors.

Descriptors/Keywords: TRICHOPLUSIA-NI, BOARMIA-SELENARIA, EARIAS-INSULANA, HELIOTHIS-VIRESCENS, ONCOPELTUS-FASCIATUS, SPODOPTERA-EXIGUA, TRIBOLIUM-CASTANEUM, DIFLUBENZURON, BAY-SIR-8514, STARVATION, INTEGUMENT DIAPAUSE, WING, ECDYSTERONE, CAPTAN, NIKKOMYCIN, POLYOXIN D, METABOLIC DRUG, N ACETYL-D GLUCOSAMINE

Record - 241

INHIBITION OF TRIBOLIUM GUT CHITIN SYNTHETASE EC-2.4.1.16

COHEN E; CASIDA J E

PESTIC BIOCHEM PHYSIOL 13 (2). 1980. 129-136.

Full Journal Title: Pesticide Biochemistry and Physiology

Language: ENGLISH

ABSTRACT

The chitin synthetase (CS) of *T. castaneum* gut is inhibited 50% by 0.02 .mu.M nikkomycin and 4 .mu.M polyoxin D, 2 pyrimidine nucleoside fungicides, in in vitro assays with 10 min preincubation of enzyme and inhibitor prior to substrate addition. *Tribolium* CS is also sensitive to inhibition by the pyrimidine nucleotides uridine and cytidine di- and triphosphates. Captan, a known inhibitor of insect chitin synthesis, and the related fungicides captafol and dichlofluanid are highly potent inhibitors of *Tribolium* CS. Moderately active CS inhibitors are the acaricide oxythioquinox and the herbicide barban. One phenylcarbamate insect growth retardant, H-24108, is weakly active in inhibiting *Tribolium* gut CS, as are 3 of its analogs but not 26 others. Many triazines are not inhibitory including several herbicides and an azido derivative, CGA 19255, which is active in blocking insect growth and chitin synthesis. Although the benzoylphenyl urea insecticides diflubenzuron and SIR 8514 are potent in vivo inhibitors of the polymerization step in insect chitin synthesis, they do not affect *T. castaneum* gut CS activity in vitro and greatly stimulate *T. brevicornis* gut CS activity in vivo. These studies on an integumental enzyme indicate that CS of these tissues is not sensitive to the direct action of benzoylphenyl ureas. The benzoylphenyl ureas may act either as CS inhibitors via active metabolites formed in the integument or as blocking agents by direct binding to non-CS sites important in chitin polymerization and fibrillogenesis.

Descriptors/Keywords: TRIBOLIUM-CASTANEUM, TRIBOLIUM-BREVICORNIS, FUNGICIDE,

NIKKOMYCIN, POLYOXIN D ,UDP CDP, CAPTAN, CAPTAFOL, DICHLOFLUANID, ACARICIDE, OXYTHIOQUINOX, HERBICIDE BARBAN, PHENYLCARBAMATE, INSECT GROWTH RETARDANT, DIFLUBENZURON, BENZOYLPHENYL UREA, CHITIN POLYMERIZATION, FIBRILLOGENESIS

Record - 242

EFFECTIVENESS OF DIFLUBENZURON IN THE UPPER GULF COAST OF TEXAS USA
COLE C L

SOUTHWEST ENTOMOL 0 (SUPPL. 1). 1980. 22-26.

Full Journal Title: Southwestern Entomologist

Language: ENGLISH

ABSTRACT

Diflubenzuron was compared to azinphosmethyl as a control for overwintered boll weevils. Punctured cotton squares were detected earlier in fields treated with diflubenzuron than in those treated with azinphosmethyl. Dissections of punctured squares showed a reduction in boll weevil survival where 3 or 5 applications of diflubenzuron were applied. In fields treated with 5 applications of diflubenzuron, retention of punctured squares after 2 wk exceeded 70%.

Descriptors/Keywords: AZINPHOS-METHYL INSECTICIDE

Record - 243

BIOLOGICAL IMPACT OF CONTACT INSECTICIDES AND INSECT GROWTH REGULATORS ON ISOLATED STAGES OF THE GREENHOUSE WHITEFLY TRIALEURODES VAPORARIORUM
HOMOPTERA ALEYRODIDAE

COLLMANN G L; ALL J N

J ECON ENTOMOL 75 (5).1982. 863-867.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Greenhouse experiments revealed efficacy of 11 insecticides (2 organophosphates 2 formulations of a synthetic pyrethrin, 2 pyrethroids, 3 juvenile hormone analogs and 2 molt inhibitors) on an asynchronous population of *T. vaporariorum* (Westwood). To determine the mechanism of chemical control, it was necessary to study the susceptibility of 7 discrete greenhouse whitefly stages to 4 of the insecticides in an environmental chamber. Permethrin was the most effective toxicant through its broad activity on whitefly life stages. Pennacpthrin (microencapsulated resmethrin) was effective against 2nd and 3rd instars and had some activity adults, but it allowed substantial adult emergence after the treatment of eggs, 1st-stage larvae, or pupae. Enstar (juvenile hormone analog, Prop-2-ynyl 3,7,11-trimethyl 2,4-dodecadienoate) controlled 2nd, 3rd and early-pupal instars but was ineffective on eggs, 1st-stage larvae, pupae and adults. Diflubenzuron had no substantial effects on any stage. The nature of the toxicity of permethrin, Pennacpthrin and Enstar was of an immediate toxicity or a toxicity delayed to a subsequent immature stage. No toxicant produced adult sterility or affected longevity or fecundity.

Descriptors/Keywords: PERMETHRIN,, PENNCAPTHRIN PROP-2-YNYL-3 7

11-TRIMETHYL-2 4 DODECADIENOATE, DIFLUBENZURON, ENSTAR, LONGEVITY, FECUNDITY

Record - 244

DIETS OF ICTALURUS NEBULOSUS AND POMOXIS NIGROMACULATUS ALTERED BY DIFLUBENZURON

COLWELL A E; SCHAEFER C H

CAN J FISH AQUAT SCI 37 (4). 1980. 632-639.

Full Journal Title: Canadian Journal of Fisheries and Aquatic Sciences

Language: ENGLISH

ABSTRACT

Diflubenzuron [an insect growth regulator] was applied to 5 experimental ponds, yielding a mean concentration of 13 .mu.g/l. Residues in the water declined below detectable limits (0.2 .mu.g/l) by 14 days posttreatment. Young-of-the-year black crappie (*P. nigromaculatus*) and brown bullhead (*I. nebulosus*) accumulated diflubenzuron and then eliminated all residues by 7 days posttreatment. No fish mortalities occurred after the treatment. For 1 mo. following treatment, stomach content analyses indicated major alterations in the diets of the fish. Growth rates and condition factors of the fish 3 mo. after treatment were similar to control fish in 4 untreated ponds.

Descriptors/Keywords: BLACK CRAPPIE, BROWN BULLHEAD, STOMACH, INSECT GROWTH REGULATOR

Record - 245

COLWELL, A. E., AND C. H. SCHAEFER. 1978. EFFECTS OF DIMILIN ON NON-TARGET ORGANISMS DURING A CHAOBORUS FIELD TRAIL. LAKE COUNTY MOSQUITO ABATEMENT DISTRICT, LAKEPORT, CALIFORNIA 95453.

Record - 246

COLWELL, A. E., AND C. H. SCHAEFER. 1978. EFFECTS OF DIFLUBENZURON ON ICTALURUS NEBULOSUS AND POMOXIS NIGROMACULATUS. REPORT LAKE COUNTY MOSQUITO ABATEMENT DISTRICT, CALIFORNIA.

Record - 247

COOK, C. W., AND R. R. GERHART. 1977. SELECTIVE MORTALITY OF INSECTS IN MANURE FROM CATTLE FEED RABON AND DIMILIN. ENVIRON. ENTOMOL. 6 (4) PP 588-590.

Record - 248

EFFECT OF DIFLUBENZURON APPLICATION ON EASTERN DECIDUOUS FOREST BIRDS

COOPER R J; DODGE K M; MARTINAT P J; DONAHOE S B; WHITMORE R C

J WILDL MANAGE 54 (3). 1990. 486-493.

Full Journal Title: Journal of Wildlife Management

Language: ENGLISH

ABSTRACT

We conducted a replicated experiment in eastern West Virginia [USA] to examine the effect of diflubenzuron on the abundance of deciduous forest birds. Diets of 7 insectivorous bird species [*Parus atricapillus*, *P. bicolor*, *Polioptila caerulea*, *Vireo olivaceus*, *Dendroica pinus*, *Helminthos vermivorus* and *Piranga olivacea*] and foraging behavior of male red-eyed vireos (*Vireo olivaceus*) also were examined in treated and untreated areas. Although caterpillars were less common on treated areas, none of the 21 common bird species was significantly ($P < 0.10$) more abundant in untreated than treated plots. Significant differences in the percentage of Lepidoptera larvae in diets were observed for all species examined except the worm-eating warbler (*Helminthos vermivorus*) and blue-gray gnatcatcher (*Polioptila caerulea*). Two different measures of area covered per unit time spent foraging indicated that vireo foraging areas were 3.1 and 2 times larger on treated areas than on untreated areas, respectively. Differences in diet and foraging behavior were likely related to the decrease in abundance of caterpillars on treated plots.

Descriptors/Keywords: PARUS-ATRICAPILLUS, PARUS-BICOLOR, POLIOPTILA-CAERULEA, VIREO-OLIVACEUS, DENDROICA-PINUS, HELMITHEROS-VERMIVORUS, PIRANGA-

OLIVACEA, CATERPILLAR ,FORAGING BEHAVIOR, FOOD SOURCE LOSS, WEST VIRGINIA

Record - 249

CORBIN, V., AND D. NYE. 1978. FATE OF 14C-LABELED DIFLUBENZURON ON CITRUS UNDER FIELD CONDITIONS. UNPUBLISHED STUDY RECIEVED DEC. 15, 1978 UNDER 148-EX-25; PREPARED BY STONE LABORATORIES, INC., SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO.

Record - 250

COSTLOW, J.D. 1987. ACUTE TOXICITY OF DIFLUBENZURON DFB TO VARIOUS LIFE STAGES OF THE GRASS SHRIMP PALAEMONETES PUGIO. WATER AIR SOIL POLLUT. 33 (304) PP 411-418.

Record - 251

THE EFFECTS OF POLLUTANTS ON LARVAL DEVELOPMENT OF THE BLUE CRAB CALLINECTES SAPIDUS

COSTLOW J D ; BOOKHOUT C G

1982 ANNUAL MEETING OF THE NATIONAL SHELLFISHSERIES ASSOCIATION
BALTIMORE, MD., USA, JUNE 14-17, 1982. J SHELLFISH RES 3 (1). 1983. 87-88.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: ABSTRACT, INSECTICIDE, METAL POLLUTION, WATER POLLUTION, MALATHION, METHOXYCHLOR, MIREX, KEPONE, DIMILIN, CADMIUM, MERCURY

Record - 252

EFFECT OF DIMILIN ON DEVELOPMENT OF LARVAE OF THE STONE CRAB
MENIPPE MERCENARIA AND THE BLUE CRAB CALLINECTES SAPIDUS

COSTLOW J D

VERNBERG, W. B. ET AL. (ED.). MARINE POLLUTION: FUNCTIONAL RESPONSES;
PROCEEDINGS OF THE SYMPOSIUM ON POLLUTION AND PHYSIOLOGY OF MARINE
ORGANISMS, GEORGETOWN, S.C., USA, NOV. 14-17, 1977. XIII+454P. ACADEMIC
PRESS, INC.: NEW YORK, N.Y., USA; LONDON, ENGLAND. ILLUS. ISBN
0-12-718260-8. 0 (0). 1979. P 355-364.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: SURVIVAL RATE, INSECTICIDE

Record - 253

DIFLUBENZURON LABORATORY EVALUATION AGAINST 3 LEPIDOPTERAN PESTS OF
VEGETABLES

COUDRIET D L; SEAY R S

J GA ENTOMOL SOC 14 (4). 1979. 325-329.

Full Journal Title: Journal of the Georgia Entomological Society

Language: ENGLISH

ABSTRACT

Diflubenzuron applied to the surface of an artificial diet caused mortality to all larval instars of the cabbage looper, *Trichoplusia ni* (Huebner), beet armyworm, *Spodoptera exigua* (Huebner) and tobacco budworm, *Heliothis virescens* (F.). The first 3 larval instars of these species were more susceptible than the later instars. Fifth instar cabbage looper larvae were more susceptible at 100 ppm dose than 5th instar beet

armyworm and tobacco budworm larvae.

Descriptors/Keywords: TRICHOPLUSIA-NI, SPODOPTERA-EXIGUA, HELIOTHIS-VIRESCENS, MORTALITY, ARTIFICIAL DIET

Record - 254

CRANHAM, J.E. 1978. CONTROL OF CODLING MOTH WITH DIFLUBENZURON. MITT BIOL BUNDESANST LAND -FORSTWITSCH BERL-DAHLEM (180) 1978 PP 108-11.

Record - 255

EFFECT OF DIFLUBENZURON DIMILIN TH-6040 ON THE HYALURONIC-ACID CONCENTRATION IN CHICKEN COMBS

CROOKSHANK H R; SOWA B A; KUBENA L; HOLMAN C M; SMALLEY H E; MORISON R
US AGRIC. RES. SERV., COLLEGE STATION, TEX. 77840, USA.

Full Journal Title: Poultry Science

Language: ENGLISH

ABSTRACT

Addition of N-[[[(4-chlorophenyl)amino] carbonyl]-2,6-difluorobenzamide(diflubenzuron; Dimilin; TH-6040) up to levels of 250 ppm of the total diet of male broilers and layers for 98 days did not affect the hyaluronic acid (HA) concentration (.mu.g/g tissue) in the combs. The concentration was measured at 21, 28, 42, 56 and 98 days on feed. The concentration in the combs of the layers were not significantly different at any sampling period, regardless of diet. At the end of 56 days on feed, the combs of the broiler controls had a significantly ($P < .025$) higher concentration than did any of the groups fed diflubenzuron. There were no differences observed at 21, 28, 42 or 98 days in the broilers. HA concentration increased as the chickens matured and became larger; however, large variations were observed within the various groups at a given sample period.

Descriptors/Keywords: SEX DIFFERENCES

Record - 256

CROSBY, D.G. 1964. TOXICITY OF CASORON TO DAPHIA MAGNA ; REPORT THOMPSON-HAYWARD CHEMICAL COMPANY NO.

Record - 257

DIFLUBENZURON INDUCED DECREASE OF EGG HATCH OF SCREWORMS DIPTERA CALLIPHORIDAE

CRYSTAL M M

J MED ENTOMOL 15 (1). 1978. 52-56.

Full Journal Title: Journal of Medical Entomology

Language: ENGLISH

ABSTRACT

When diflubenzuron (N-[[[(4-chlorophenyl)amino]-carbonyl]-2,6-difluorobenzamide) was fed to screwworms, *Cochliomyia hominivorax*, egg hatch was reduced. Males were not affected, but when females of 3 ages were fed the material, hatch was reduced. Inhibition was greater in more mature eggs. The greatest inhibition occurred (often hatch was less than 5%) when females that contained mature eggs fed at least 1 h and ingested at least 0.4 mg of the chemical. Some eggs that hatched showed a delayed effect, i.e., the larvae died early in development. Treated females gradually recovered from the effects of diflubenzuron approximately 10 days after treatment. The activity of the chemical was limited to a single gonotrophic cycle.

Descriptors/Keywords: COCHLIOMYIA-HOMINIVORAX

Record - 258

EFFECTS OF DIFLUBENZURON DIMILIN ON SURVIVAL MOLTING AND BEHAVIOR OF JUVENILE FIDDLER CRABS UCA PUGILATOR

CUNNINGHAM P A; MYERS L E

ARCH ENVIRON CONTAM TOXICOL 16 (6). 1987. 745-752.

Full Journal Title: Archives of Environmental Contamination and Toxicology

Language: ENGLISH

ABSTRACT

The effects of repetitive 24-hr weekly exposures to diflubenzuron (Dimilin) on juvenile fiddler crabs (*U. pugilator*) were studied in static seawater systems for 10 weeks. Crabs surviving the 10-week exposure period were maintained in clean seawater until death. Survival, molting, and behavior were monitored daily. The no-effect concentration (NOEC) for molting (time to the first molt), survival (time until death), and behavior (ability to escape from the test container) were 20, 2, and 0.2 .mu.g/L DFB, respectively. The behavioral effect induced by diflubenzuron (DFB) exposures (.gtoreq. 2 .mu.g/L) was the most sensitive indicator of DFB activity and potentially may influence the ability of juvenile crabs to avoid predation, construct burrows, or feed adequately to survive in nature.

Descriptors/Keywords: MARICULTURE, WATER POLLUTION, GROWTH REGULATOR, INSECTICIDE

Record - 259

EFFECTS OF SEDIMENT ON THE PERSISTENCE AND TOXICITY OF DIFLUBENZURON DIMILIN IN ESTUARINE WATERS A LABORATORY EVALUATION USING LARVAE OF TWO ESTUARINE CRUSTACEANS

CUNNINGHAM P A; WILSON J E H; EVANS D W; COSTLOW J D JR

VERNBERG, W. B., ET AL. (ED.). THE BELLE W. BARUCH LIBRARY IN MARINE SCIENCE, NO. 17. POLLUTION PHYSIOLOGY OF ESTUARINE ORGANISMS; SYMPOSIUM, GEORGETOWN, SOUTH CAROLINA, USA, OCTOBER 21-24, 1985. XIII+458P. UNIVERSITY OF SOUTH CAROLINA PRESS: COLUMBIA, SOUTH CAROLINA, USA. ILLUS. ISBN 0-87249-510-8. 0 (0). 1987. 299-332.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: RHITHROPANOPAEUS-HARRISSI, PALAEMONETES-PUGIO, INSECTICIDE

Record - 260

A REVIEW OF TOXICITY TESTING AND DEGRADATION STUDIES USED TO PREDICT THE EFFECTS OF DIFLUBENZURON DIMILIN ON ESTUARINE CRUSTACEANS

CUNNINGHAM P A

ENVIRON POLLUT SER A ECOL BIOL 40 (1). 1986. 63-86.

Full Journal Title: Environmental Pollution Series A Ecological and Biological

Language: ENGLISH

ABSTRACT

This review surveys the pertinent literature on the effects of diflubenzuron (Dimilin) on non-target crustacean species when applied for mosquito control to freshwater and saltwater habitats. Freshwater research has focused on field testing, while estuarine research has been limited almost exclusively to laboratory toxicity studies. Several experimental design factors may affect the toxicity and persistence of diflubenzuron. These factors include formulation, frequency of application (exposure), presence of

organic matter and sediment in the test system, pH and water temperature. Biological factors such as the age of the test organism and the frequency and synchrony of moulting during the exposure period also influence the observed response of the experimental crustacean population. Assessment of the impact of DFB on estuarine crustaceans is difficult as few studies have been conducted under conditions appropriate to its use in saltmarsh mosquito control.

Descriptors/Keywords: SEDIMENT, INSECTICIDE, TEMPERATURE

Record - 261

DYNAMICS OF DIFLUBENZURON DIMILIN CONCENTRATIONS IN WATER AND SEDIMENT OF A SUPRATIDAL SALT MARSH SITE FOLLOWING REPETITIVE AERIAL APPLICATIONS FOR MOSQUITO CONTROL

CUNNINGHAM P A; MYERS L E

ENVIRON POLLUT SER A ECOL BIOL 41 (1). 1986. 63-88.

Full Journal Title: Environmental Pollution Series A Ecological and Biological

Language: ENGLISH

ABSTRACT

A field study was conducted to monitor changes in diflubenzuron (DFB) and a degradation product, 4-chlorophenylurea (CPU) in water and sediment collected from a supratidal mosquito breeding lagoon. Three applications of a 0.4% sand granule followed by three applications of a 25% wettable powder formulation were made to the site. Substantial differences in the dynamics of both DFB and CPU concentrations in water were noted among applications. Non-linearity of the logarithm of DFB concentrations in water as a function of time was also evident in some applications. In such cases, the half-life parameter does not characterize the dynamics of the process and is of questionable value. For four of the six applications, there was strong evidence of a decrease in DFB concentration in water. However, there was not significant evidence of a decrease in DFB concentrations in sediment, which appeared to be a major site for DFB absorption. Water concentrations for each analyte (DFB, CPU) were negatively correlated with sediment concentrations for the same analyte, suggesting that an exchange of both analytes occurs across the water/sediment interface. Also, positive correlations were noted between DFB and CPU in both water and sediment. These correlation findings are counter-intuitive, if it is assumed that changes in DFB and CPU concentrations are mainly due to degradation of the former to the latter. While DFB concentrations in the supratidal lagoon water tended to remain above 0.4 $\mu\text{g liter}^{-1}$ for 7 days post application, it seems unlikely that this toxic concentration would affect planktonic larval crustaceans in adjacent estuaries if DFB entered these waters via runoff or by flooding of supratidal areas. The persistent DFB concentrations in the water and sediment (approx. 100 $\mu\text{g kg}^{-1}$), however, could be detrimental to detrital-feeding populations of marsh crustaceans (e.g. *Uca*).

Descriptors/Keywords: UCA, CRUSTACEAN, LARVAE, DETRITUS FEEDER, ESTUARY, 4 CHLOROPHENYLUREA

Record - 262

CUNNINGHAM, P.A. 1976. EFFECTS OF DIMILIN (TH-6040) [INSECT GROWTH REGULATING COMPOUND] ON REPRODUCTION IN THE BRINE SHRIMP, ARTEMIA SALINA. ENVIRON. ENTOMOL. 5 (4) PP 701-706.

Record - 263

CUZIN-ROUDY, J. 1979. EFFECTS OF POLLUTANTS ON THE SURVIVAL OF THE LARVAE OF PALEMONETES PUGIO (CRUSTACEA, DECAPODA). IN-HOUSE REPORT DUKE UNVI. BEAUFORT, N-CAROLINA.

Record - 264

CZERWINSKI, C., AND M. B. ISMAN. 1986. URBAN PEST MANAGEMENT: DECISION-MAKING AND SOCIAL CONFLICT IN THE CONTROL OF GYPSY MOTH IN WEST COAST CITIES. DEP. PLANT SCI., UNIV. BRITISH COLUMBIA, VANCOUVER, BC, CANADA. BULLETIN OF THE ENTOMOLOGICAL SOCIETY OF AMERICA 1986. 32 (1): 36-41.

Record - 265

THE INSECT GROWTH REGULATOR DIFLUBENZURON ITS MAIN CHARACTERISTICS AND USE
DALEBOUT C P

REGUPATHY, A. AND S. JAYARAJ (ED.). BEHAVIOURAL AND PHYSIOLOGICAL APPROACHES IN PEST MANAGEMENT; MEETING, COIMBATORE, MADRAS, INDIA, JUNE 21-23, 1984. XVIV++218P. TAMIL NADU AGRICULTURAL UNIVERSITY: COIMBATORE, MADRAS, INDIA. ILLUS. PAPER. 0 (0). 1985. 161-166.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: MODE OF ACTION, SELECTIVITY

Record - 266

DANHAUS, R.G., J. P. WARGO, AND R. F. SIECK. 1976. 14C-DIMILIN FIELD SOIL LEACHING STUDY. REPORT ANALYTICAL DEVELOPMENT CORPORATION, COLORADO.

Record - 267

COMPUTER-ASSISTED METABOLIC PREDICTION A HELP IN DEVELOPMENT AND DESIGN OF PESTICIDES

DARVAS F; EKER R

FREHSE, H. (ED.). PESTICIDE CHEMISTRY: ADVANCES IN INTERNATIONAL RESEARCH, DEVELOPMENT, AND LEGISLATION; SEVENTH INTERNATIONAL CONGRESS OF PESTICIDE CHEMISTRY, HAMBURG, GERMANY, AUGUST 5-10, 1990. XIV+666P. VCH VERLAGSGESELLSCHAFT MBH: WEINHEIM, GERMANY; VCH PUBLISHERS INC.: NEW YORK, NEW YORK, USA. ILLUS. ISBN 3-527-28111-8; ISBN 0-89573-975-5. 0 (0). 1991. 287-296.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: PLANTS, DIFLUBENZURON, HERBICIDE, REVERSED PHASE, HIGH PERFORMANCE LIQUID CHROMATOGRAPHY

Record - 268

DARWAZEH, H.A., M. S. MULLA, AND M.S. DHILLON. 1977. GRANULAR DIMILIN AS PREHATCH TREATMENT FOR THE CONTROL OF FLOODWATER MOSQUITOS PSOROPHORA CONFINNIS AND AEDES NIGROMACULIS. PROC. PAP. ANNU. CONF. CALIF. MOSQ. CONTROL ASSN. 45TH: 143-145.

Record - 269

DAVIES, R.E., J. C. HALLIDAY, A. E. STREET, ET AL . 1975. EFFECTS OF REPEATED APPLICATIONS OF DU 112307 TO THE SKIN OF RABBITS FOR THREE WEEKS. PDR146/73845. UNPUBLISHED STUDY

RECIEVED FEB 10, 1976 UNDER 6G1744; PREPARED BY HUNINGDON RESEARCH CENTER,
SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY KS.

Record - 270

DAVIES, R.E., AND J. C. HALLIDAY. 1974. ACUTE PERCUTANEOUS TOXICITY TO RABBITS OF DU 112307 (TECHNICAL)": REPORT NO. 2171/D175/73. ; UNPUBLISHED STUDY RECEIVED FEB 10, 1976 UNDER 6G1744; PREPARED BY HUNINGDON RESEARCH CENTER, ENGLAND; SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 271

THE HAZARDS OF INSECTICIDES TO BUTTERFLIES OF FIELD MARGINS

DAVIS B N K; LAKHANI K H; YATES T J

AGRIC ECOSYST ENVIRON 36 (3-4). 1991. 151-162.

Full Journal Title: Agriculture Ecosystems & Environment

Language: ENGLISH

ABSTRACT

Three species of field-margin butterflies are compared with laboratory-cultured Large white *Pieris brassicae* in their response to insecticides. Four insecticides, spanning a 600-fold range in toxicity, were tested by topical applications to young larvae. The Green-veined white *Pieris napi* was consistently found to be about half as sensitive as *Pieris brassicae*. Field tests with *Pieris napi* and laboratory tests with the Hedge brown *Pyronia tithonus* and the Common blue *Polyommatus icarus* supported the selection of *Pieris brassicae* as an indicator species for bioassay studies of insecticide spray drift.

Descriptors/Keywords: INSECT, PIERIS-NAPI, PIERIS-BRASSICAE, PYRONIA-TITHONUS, POLYOMMATUS-ICARUS, INDICATOR SPECIES, DIMETHOATE, PHOSALONE, FENITROTHION, DIFLUBENZURON, TOXICITY

Record - 272

BIOASSAYS OF INSECTICIDE SPRAY DRIFT THE EFFECTS OF WIND SPEED ON THE MORTALITY OF PIERIS BRASSICAE LARVAE LEPIDOPTERA CAUSED BY DIFLUBENZURON

DAVIS B N K; LAKHANI K H; YATES T J; FROST A J

AGRIC ECOSYST ENVIRON 36 (3-4). 1991. 141-150.

Full Journal Title: Agriculture Ecosystems & Environment

Language: ENGLISH

ABSTRACT

The environmental hazards of insecticide spray drift were examined at five different wind speeds. Two-day-old *Pieris brassicae* larvae were used in field bioassays to measure the effects of diflubenzuron (applied at 100 g ha⁻¹) downwind of sprayed areas. Exponential and logistic models were used to describe the observed mortalities at different distances; the fitted models provided the estimates of distances at which the expected mortality would be 50%, 20% and 10%. At the lowest modal wind speed of 2.0 m s⁻¹ (at 2 m height) there was negligilbe kill beyond 4 m, while at 5.3 m s⁻¹ over 95% mortality occurred up to 16 m. The latter wind speed is above that recommended for spraying insecticides, but even at 2.5 m s⁻¹ (equivalent to force 3 on the Beaufort Scale) 24% mortality was recorded at 24 m.

Descriptors/Keywords: INSECT PEST CONTROL, MATHEMATICAL MODEL, BEAUFORT SCALE, MORTALITY, LARVAE, ENVIRONMENTAL HAZARD, CHITIN INHIBITOR, DEPOSITION

Record - 273

IMPACT OF CHEMICAL CONTROL APPLICATIONS FOR THE DOUGLAS-FIR TUSSOCK MOTH

ON BENEFICIAL INSECTS INCLUDING BIOLOGICAL STUDIES OF BEES YELLOW-JACKETS
AND FLESH FLIES

DAVIS E J; ROBINSON W S; ROUSH C F; AKRE R D; JOHANSEN C A; TURNER W J

MELANDERIA 30. 1978. III-IV, 1-8.

Full Journal Title: Melanderia

Language: ENGLISH

ABSTRACT

A suitable material to replace DDT was investigated for control of *Orgyia pseudotsugata*. The region studied included the Blue Mountains of the western USA. The insecticides studied were carbaryl, diflubenzuron and acephate. Results, methods and weather conditions are included.

Descriptors/Keywords: WESTERN USA, ORGYIA-PSEUDOTSUGATA, INSECTICIDE, DDT, ACEPHATE, CARBARYL, DIFLUBENZURON, WEATHER

Record - 274

DAVTIAN, L.T., E. G. GRIGORIAN, AND V. N. BUROV. 1986. CONTROL OF A COMPLEX OF
LEAFMINING INSECT PEST. ZASHCHITA RASTENII. 1986; (9) P35.

Record - 275

EFFECTS OF EARLY SEASON APPLICATIONS OF DIFLUBENZURON AND AZINPHOS-METHYL
ON POPULATION LEVELS OF CERTAIN ARTHROPODS IN COTTON FIELDS

DEAKLE J P; BRADLEY J R JR

J GA ENTOMOL SOC 17 (2). 1982. 200-204.

Full Journal Title: Journal of the Georgia Entomological Society

Language: ENGLISH

ABSTRACT

The effects of 4 early-season diflubenzuron applications followed by a single application of azinphosmethyl upon certain arthropod predators [*Coleomegilla maculata* (DeGeer), *Hippodamia convergens* Guerin, *Orius insidiosus* (Say), *Geocoris punctipes* (Say), *Nabis* spp., *Chrysopa* spp., *Aphis gossypii* Glover] and *Heliothis* spp. were assessed in 20 North Carolina [USA] cotton fields. Predator populations were unaffected by diflubenzuron, but significantly reduced by azinphos methyl. Predator populations rapidly resurged in insecticide-treated fields to levels equal to or greater than populations in untreated fields. Late-season *Heliothis* spp. numbers were unaffected by early-season applications of diflubenzuron and azinphosmethyl.

Descriptors/Keywords: HELIOTHIS-SPP, COLEOMEGILLA-MACULATA, HIPPODAMIA-CONVERGENS, ORIUS-INSIDIOSUS, GEOCORIS-PUNCTIPES, CHRYSOPA-SPP, APHIS-GOSSYPYII, NORTH-CAROLINA, USA

Record - 276

DE BOER, F.G. 1979. DIMILIN IN MUSHROOMS. A REVIEW OF RESIDUES AND EVALUATION OF A TOLERANCE PROPOSAL. REPORT NO. 56683/7/79. ; UNPUBLISHED STUDY BY PHILLIPS-DUPHAR B.V., 9 PAGES.

Record - 277

DE BOER, F.G. 1979. PHILLIPS-DUPHAR B.V., REPORT NO. 56683/7/79 DATED 2.79: DIMILIN IN MUSHROOMS. SUBMITTED TO THE EPA BY JOHN W. KENNEDY CONSULTANTS, INC. WITH A LETTER DATED 10/15/1982; IN: CORRESPONDENCE FILE FOR PP#2E2731.

Record - 278

DISTRIBUTION OF RADIOLABELLED CHLORFLUAZURON AND DIFLUBENZURON IN THE
LAST LARVA OF LEPTINOTARSA DECEMLINEATA SAY COLEOPTERA CHRYSOMELIDAE
DE COCK A; HEGAZY G; SALEM H; DEGHEELE D

MEDED FAC LANDBOUWWET RIJKSUNIV GENT 54 (1). 1989. 115-120.

Full Journal Title: Mededelingen van de Faculteit Landbouwwetenschappen Rijksuniversiteit Gent

Language: ENGLISH

ABSTRACT

14C-chlorfluazuron and 14C-diflubenzuron were fed to the Colorado potato beetle *Leptinotarsa decemlineata* (Say) throughout the 4th instar. The distribution of the two labelled insecticides was determined in different parts of the body as well as in the excrements. The transport of 14C-chlorfluazuron into the larval body was relatively high: 56.0% of the amount was found after 24 h and 27.4% after 72 h in the larval body. The distribution of these amounts in the different parts of the body was as follows: 11.1% and 9.7% in the cuticle, 16.7% and 7.8% in the food canal and 28.2% and 9.9% in the haemolymph 24 and 72 h after application. The excrements contained 36.1% and 65.3% of the chlorfluazuron amount 24 and 72 h after application, respectively. For diflubenzuron only 13.7% and 8.0% was found in the larval body 24 and 72 h after application. The distribution of these amounts in the different parts of the body exhibited 5.3% and 2.5% in the cuticle, 3.1% and 3.3% in the food canal and 5.1% and 2.4% in the haemolymph; 75.6% and 89.5% were found in the excrements 24 and 72 h after application. According to these results, chlorfluazuron could be considered to be more toxic than diflubenzuron.

Descriptors/Keywords: INSECTICIDE, FOOD CANAL, HEMOLYMPH, CUTICLE, EXCREMENT

Record - 279

CHEMICAL CONTROL OF THE SOYBEAN CATERPILLAR ANTICARSIA GEMMATALIS IN
FIELD CONDITIONS OF MATO-GROSSO-DO-SUL BRAZIL

DEGASPARI N; GOMEZ S A

PESQUI AGROPECU BRAS 17 (4). 1982. 513-518.

Full Journal Title: Pesquisa Agropecuaria Brasileira

Language: ENGLISH

ABSTRACT

The effectiveness of various insecticides applied in spray against *A. gemmatalis* Hueb. 1818 were studied, as well as their action on its natural enemies and their residual action in field conditions. The products used, with their respective rates in g a.i.[active ingredient]/ha, were: *Bacillus thuringiensis* (500), carbaryl (200), ethyl chlorpyrifos (240), diflubenzuron (25), endosulfan (175), fenitrothion (500), methyl parathion (200), monocrotophos (200), trichlorphon (400), triazophos (200), endrin (200) and malathion (500). Some effectiveness was registered in almost all treatments, both 12 h and 2 days after the application of the insecticides. Only *B. thuringiensis*, diflubenzuron and malathion did not show good results. The products ethyl chlorpyrifos, diflubenzuron, endosulfan, triazophos and endrin were effective until 7 days after the application, with effectiveness .apprx. 80% against the caterpillars originated from a new generation. Diflubenzuron, although it had not shown good initial results, was the only one which showed major residual effect against the caterpillars in the field. The most common natural enemies were *Geocoris* sp., *Nabis* sp., *Podisus* sp. and spiders. The action of the insecticides against them was not observed in this experiment.

Descriptors/Keywords: BACILLUS-THURINGIENSIS, GEOCORIS-SP, NABIS-SP, PODISUS-SP, SPIDER, CARBARYL, CHLORPYRIFOS-ETHYL, DIFLUBENZURON, ENDOSULFAN, FENITROTHION, METHYL PARATHION, MONOCROTAPHOS, TRICHLORPHON, TRIAZOPHOS, ENDRIN, MALATHION

Record - 280

TOXICITY OF BENZOYLPHENYLUREAS TO THE AFRICAN ARMYWORM SPODOPTERA EXEMPTA WALKER

DEGHEELE D; YI S-X; BAI C

CROP PROT 12 (1). 1993. 35-38.

Full Journal Title: Crop Protection

Language: ENGLISH

ABSTRACT

Four benzoylphenylureas, assessed under laboratory conditions, have a high level of activity against third-instar larvae of *Spodoptera exempta* (Lepidoptera: Noctuidae). The LC₅₀ values were 0.013, 0.035, 0.074 and 0.138 .mu.g ml⁻¹ 48 h after exposure; 0.006, 0.007, 0.035 and 0.062 .mu.g ml⁻¹ 72 h after exposure and 0.001, 0.004, 0.013 and 0.010 .mu.g ml⁻¹ 96 h after exposure for teflubenzuron, hexaflumuron, flufenoxuron and diflubenzuron, respectively. In relation to ovicidal activity, the LC₅₀ values were 0.186, 0.490, 0.947 and 5.834 .mu.g ml⁻¹ to eggs 0-24 h old and 0.420, 1.085, 5.966 and 18.493 .mu.g ml⁻¹ to eggs 24-48 h old, for hexaflumuron, flufenoxuron, teflubenzuron and diflubenzuron, respectively. The LC₉₅ value for hexaflumuron was < 4 .mu.g ml⁻¹ to the eggs. Teflubenzuron, hexaflumuron, flufenoxuron and diflubenzuron are extremely effective pesticides and can be tested against larvae of *S. exempta* in the field. Hexaflumuron, flufenoxuron and teflubenzuron can also be tested for their ovicidal activity.

Descriptors/Keywords: CEREAL PEST CONTROL, TEFLUBENZURON, HEXAFLUMURON, FLUFENOXURON, DIFLUBENZURON, OVICIDE ACTIVITY, PESTICIDE ACTIVITY

Record - 281

STUDIES ON ADOXOPHYES ORANA THE MAJOR LEAF-ROLLER PEST IN APPLE ORCHARDS IN THE NETHERLANDS

DE JONG D J; MINKS A K

MITT SCHWEIZ ENTOMOL GES 54 (3). 1981. 205-214.

Full Journal Title: Mitteilungen der Schweizerischen Entomologischen Gesellschaft

Language: ENGLISH

ABSTRACT

The summerfruit tortrix moth, *A. orana* F.v.R. (Lepidoptera, Tortricidae), can be considered as the key pest in Dutch apple orchards. In commercial orchards, it is general practice to control the larvae of this moth species with broad-spectrum insecticides. Correct timing of the sprays is essential because they are only sufficiently effective against newly emerged larvae in search of fresh leaves. Prediction of the timing is based on the heat-summation method using phenological observations with sex pheromone traps on moths of the preceding generation and temperature recordings. This forecasting system plays a major role in a program of control which is now in operation in about 25% of the orchards. The number of sprays is then reduced by half. Introduction of an integrated control program into practice is hampered by the fact that no insecticide is available for selective control of *A. orana*. Diflubenzuron is not active enough and the insect growth regulator, epifenonane, is not commercially available. Attention is being given to the development of other methods of selective control, e.g., parasites, baculoviruses and sex pheromones (mating-disruption method).

Descriptors/Keywords: PARASITE, BACULOVIRUS, DIFLUBENZURON, SEX PHEROMONE, INTEGRATED CONTROL, HEAT SUMMATION METHOD, INSECTICIDE

Record - 282

DEL BENE, G. REDIA AND G. MELIS PORCINAI. 1981. EFFECTS OF DIFLUBENZURON ON THE INTEGUMENT ULTRASTRUCTURE OF THAMETOPEA PITYOCAMPA (DEN. AND SCHIFF.) LARVAE (PINE PROCESSIONARY CATERPILLAR). "REDIA" GIORNALE DI ZOOLOGIA, V. 64, 1981. PP 331-335.

Record - 283

DEL BENE, G. AND G. MELIS PORCINAI. 1980. FURTHER OBSERVATIONS ON THE MODE OF ACTION OF DIFLUBENZURON (PIERIS BRASSICAE). "REDIA" GIORNALE DI ZOOLOGIA, V. 63, 1980. PP1-5.

Record - 284

DEL BENE, G., AND G. MELIS PORCINAI. 1979. EFFECT OF DIFLUBENZURON OF TENEBRIO MOLITOR L. "REDIA" GIORNALE DI ZOOLOGIA. 62:121-128.

Record - 285

EFFECT OF DIFLUBENZURON ON THYMIDINE INCORPORATION IN STOMOXYS ALCITRANS PUPAE

DELOACH J R; MEOLA S M; MAYER R T

SOUTHWEST ENTOMOL 6 (2). 1981. 123-125.

Full Journal Title: Southwestern Entomologist

Language: ENGLISH

ABSTRACT

Diflubenzuron treatment of stable fly, *S. calcitrans* (L.), pupae caused significant reduction in DNA synthesis. DNA synthesis was measured by the incorporation of [3H]thymidine into DNA of pupae treated with acetone or diflubenzuron at 32-36 h after pupation. Reduction in DNA synthesis was probably the result of a nonproliferation of imaginal epidermal cells. Whether the reduction in DNA synthesis is a direct or a secondary effect of diflubenzuron is inconclusive.

Descriptor/Keywords: DNA SYNTHESIS, TRITIUM, LABELED THYMIDINE, EPIDERMAL CELL

Record - 286

INHIBITION OF DNA SYNTHESIS BY DIFLUBENZURON IN PUPAE OF THE STABLE FLY STOMOXYS CALCITRANS

DELOACH J R; MEOLA S M; MAYER R T; THOMPSON J M

PESTIC BIOCHEM PHYSIOL 15 (2). 1981. 172-180.

Full Journal Title: Pesticide Biochemistry and Physiology

Language: ENGLISH

ABSTRACT

Biochemical assays of stable fly pupae treated with diflubenzuron at the white prepupal stage and then injected with either [3H]thymidine or [14C]thymidine showed no differences in uptake of the thymidine at 0-4, 0-24, 20-21 or 22-24 h after injection of the radiolabeled thymidine. At 32-36 h the diflubenzuron pupae incorporated only 10-11% of the amount of labeled thymidine incorporated by the untreated pupae. Autoradiographs taken from diflubenzuron-treated pupae at 22-24 and 32-36 h after injection of the labeled thymidine showed that a reduction in DNA synthesis had occurred in cells originating from the imaginal epidermal histoblasts. The reduction in DNA synthesis at 22-24 h was not detectable by the biochemical assay, since the number of proliferating epidermal cells was too small a proportion of the total number of cells undergoing histogenesis at this time period. The insect growth regulator, diflubenzuron, appears to be cell specific in this species of fly in that the reduction in DNA synthesis is observed only in cells originating from the imaginal epidermal histoblasts. It is not known whether this effect is primary or secondary.

Descriptors/Keywords: TRITIATED THYMIDINE, EPIDERMAL HISTO BLAST

Record - 287

AN ERYTHROCYTE ENCAPSULATOR DIALYZER USED IN PREPARING LARGE QUANTITIES OF ERYTHROCYTE GHOSTS AND ENCAPSULATION OF A PESTICIDE IN ERYTHROCYTE GHOSTS

DELOACH J R; HARRIS R L; IHLER G M

ANAL BIOCHEM 102 (1). 1980. 220-227.

Full Journal Title: Analytical Biochemistry

Language: ENGLISH

ABSTRACT

An erythrocyte encapsulator dialyzer was fabricated and tested for preparing large quantities of animal blood for encapsulation. Less than 25 min is required to dialyze 150 ml of erythrocytes for encapsulation. Data are presented showing approximately 30% encapsulation of added substances for bovine, equine and porcine erythrocytes. Encapsulation parameters such as osmolality and temperature are discussed. Data are presented on the encapsulation of the pesticide diflubenzuron in bovine erythrocytes. [These were to be reinjected into the animal to provide systemic protection against blood-sucking insects.]

Descriptors/Keywords: BLOOD SUCKING INSECT, BOVINE ERYTHROCYTES, EQUINE ERYTHROCYTES, PORCINE ERYTHROCYTES, DIFLUBENZURON, OSMOLALITY, TEMPERATURE, SYSTEMIC PROTECTION

Record - 288

LARVICIDAL EFFECTIVENESS OF DIFLUBENZURON ON FLY BREEDING SITES IN CATTLE HOUSES

DEMENYA

PARASITOL HUNG 22 (0). 1989. 87-92.

Full Journal Title: Parasitologia Hungarica

Language: ENGLISH

ABSTRACT

A field study was conducted to evaluate the larvicidal effect of diflubenzuron spraying of fly breeding sites on a cattle farm in Hungary. 0.1% and 1.0% aqueous solutions of DimilinR WP-25 were sprayed once at a rate of 0.7 g/m² and 0.5 g/m² effective substance in a calf house and in a cow barn, respectively. Fly rearings from the samples taken before and after spraying indicated that the fly community had considerably changed due to the treatment. Although the numbers of *Musca domestica* and *Coproica* goes emerging from the calf house samples were higher after the treatment than before it, signs of damages chitin synthesis were found in 80% of Muscid pupae and in 9% of *C. hirtula* imagoes. The extreme decrease of total Diptera, the numerous abnormal, dead Muscid praepupae, and the total lack of parasitoids in the cow barn samples take after treatment give evidence of a high larvicidal effect. Pteromalid parasitoids with irregular cuticle were also found.

Descriptors/Keywords: MUSCA-DOMESTICA, COPROICA-HIRTULA, DIPTERA, PTEROMALIDAE, DAMAGED CHITIN SYNTHESIS, IMAGO

Record - 289

HETERO CYCLIC ANALOGS OF DIFLUBENZURON AS GROWTH AND REPRODUCTION INHIBITORS OF THE FALL ARMYWORM AND HOUSE FLY

DEMILO A B; OSTROMECKY D M; CHANG S C; REDFERN R E; FYE R L

J AGRIC FOOD CHEM 26 (1). 1978 164-166.

Full Journal Title: Journal of Agricultural and Food Chemistry

Language: ENGLISH

ABSTRACT

New analogues of diflubenzuron (26) were synthesized and tested as inhibitors of growth and reproduction for the fall armyworm [*Spodoptera frugiperda*] and house fly [*Musca domestica*]. The most effective growth inhibitors for the fall armyworm were N-[[[(5-chloro-2-pyridinyl)amino]carbonyl]-2,6-difluorobenzamide (11) and N-[[[(5-bromo-2-pyridinyl)amino]carbonyl]-2,6-difluorobenzamide (12), both with activity comparable to that of diflubenzuron. Compounds 11 and 12 were most effective for inhibiting egg hatch when injected into adult house flies. The most effective growth inhibitors for the

house fly were compound 12, N-[[[(6-chloro-3-pyridinyl)amino]carbonyl]-2,6-difluorobenzamide (17), and 2,6-difluoro-N-[[[(4-phenyl-2-thiazolyl)amino]carbonyl]benzamide (6), but all 3 were less effective than diflubenzuron. Of all heterocyclic analogues tested the pyridine derivatives gave the best overall performance as inhibitors of growth and reproduction.

Descriptors/Keywords: SPODOPTERA-FRUGIPERDA, MUSCA-DOMESTICA

Record - 290

SIMPLE DERIVATIZATION PROCEDURE FOR GAS LIQUID CHROMATOGRAPHIC ANALYSIS OF DIFLUBENZURON IN POND WATER AND FOR ANALYSIS OF ITS TRI FLUOROMETHYL ANALOG PENFLURON IN BOLL WEEVILS

DEMILO A B; TERRY P H; RAINS D M

J ASSOC OFF ANAL CHEM 61 (3). 1978 629-635.

Full Journal Title: Journal of the Association of Official Analytical Chemists

Language: ENGLISH

ABSTRACT

A simple and convenient GLC procedure involving electron capture detection is described for determining diflubenzuron [N-((4-chlorophenyl)amino)carbonyl]-2,6-difluorobenzamide] in pond water and for determining the uptake of penfluron (trifluoromethyl analog of diflubenzuron) by boll weevils [*Anthonomus grandis* Boheman] sexually sterilized by this compound. Both compounds were requantitatively converted to their respective N-(trifluoroacetyl) anilines by treatment with trifluoroacetic anhydride and pyridine in benzene at 50-60.degree. C. In boll weevil analyses, the procedure was quantitative for penfluron at concentrations involving microgram quantities (10-35 .mu.g/weevil) without the necessity of a cleanup step. However, at submicrogram quantities, background interference necessitated a TLC cleanup prior to derivatization. This modification enabled the determination of 100 ng/weevil. Analysis for diflubenzuron in natural pond water gave excellent results. For example, diflubenzuron at 2, 0.2 and 0.02 ppm in pond water was recovered at 95, 82 and 98%, respectively. A mechanism describing the reaction is proposed.

Descriptors/Keywords: ANTHONOMUS-GRANDIS, SEXUAL STERILIZATION, UPTAKE, ANILINES

Record - 291

DEMOLIN, G., AND A. MILLET. 1983. DIMILIN USED AT THREE DOSES ON THE PINE PROCESSIONARY MOTH, THAUMETOPOEA PITYOCAMPA SCHIFF. (PINUS, HELICOPTER APPLICATION). REVUE FORESTIERE FRANCAISE. 35 (2) 1983, PP 107-110.

Record - 292

DEMOLIN, G., AND A. MILLET. 1981. TESTING OF INSECTICIDES AGAINST THE PROCESSIONARY CATERPILLAR THAUMETOPOEA PITYOCAMPA SCHIFF. COMPARATIVE ACTION OF DIFFERENT COMMERCIAL SPECIALITIES: BACTOSPEINE, DIPEL, THURICIDE AND DIMILIN (PEST OF PINE (PINUS) FOREST TREES). ANNALES DES SCIENCES FORESTIERES 38 (3), 1981. PP 389-404.

Record - 293

STEROLS OF THE PINE PROCESSIONARY CATERPILLAR THAUMETOPOEA PITYOCAMPA EFFECTS OF DIFLUBENZURON DIMILIN

DENNEULIN J C; LAMY M

EXPERIENTIA (BASEL) 38 (7). 1982. 800-801.

Full Journal Title: EXPERIENTIA (Basel)

Language: ENGLISH

ABSTRACT

Cholesterol in pine processionary caterpillars (*T. pityocampa* Schiff.; Lepidoptera) is produced mainly from .beta.-sitosterol present in their food (pine needles); it can also be synthesized from acetic acid. This synthesis is stimulated by the insecticide Dimilin but inhibited by the antibiotic tetracycline.

Descriptors/Keywords: PINE NEEDLE, CHOLESTEROL, BETA SITOSTEROL, TETRACYCLINE INHIBITION, METABOLIC-DRUG

Record - 294

LEAFROLLERS IN APPLE INTEGRATED PEST MANAGEMENT UNDER REGIMES BASED ON BACILLUS THURINGIENSIS DIFLUBENZURON OR EPOFENONANE

DE REEDE R H; GRUYS P; VAAL F

ENTOMOL EXP APPL 37 (3). 1985. 263-274.

Full Journal Title: Entomologia Experimentalis et Applicata

Language: ENGLISH

ABSTRACT

Three selective insecticides for leafroller control were evaluated as part of research efforts for refinement of Integrated Pest Management (IPM) in apple orchards in the Netherlands. Population levels, injury to fruits and degree of parasitism [*Colpoclypeus florus* Walker, *Teleutaea striata* (Gravenhorst) and *Scambus brevicornis* (Gravenhorst)] of leafrollers were studied in 0.5-1 ha plots of an experimental orchard. Plots were sprayed during 5 consecutive years with either Dimilin (diflubenzuron, a chitin synthesis inhibitor), a strain of *B. thuringiensis* (Berl.) or epofenonane, a juvenile hormone analogue. Dipel and Dimilin were not sufficiently effective in reducing population levels and degree of fruit injury. Hard to control pests in Dipel-treated plots were especially *Pandemis heparana* (Denn. and Schiff.), *Spilonota ocellana* (F.) and *Laspeyresia pomonella* (L.) and in Dimilin treated plots *P. heparana* and *Adoxophyes orana* (F.v.R.). [Also present were *Hedya nubiferana* (H.W.), *Archips podana* (Scop.), *Ptycholoma lecheana* L., *Pandemis cerasana* (HB) and *Acleris* sp.] Epofenonane could not be evaluated properly because of interference by immigration of moths from nearby untreated plots.

Descriptors/Keywords: PANDEMIS-HEPARANA, SPILONOTA-OCELLANA, LASPEYRESIA-POMONELLA, ADOXOPHYES-ORANA, HEDYA-NUBIFERANA, ARCHIPS-PODANA, PTYCHOLOMA-LECHEANA, PANDEMIS-CERASANA, ACLERIS-SP, CALPOCLYPEUS-FLORUS, TELEUTAEA-STRIATA, SCAMBUS-BREVICORNIS, APPLE ORCHARD, CHITIN SYNTHESIS INHIBITOR, JUVENILE HORMONE ANALOG, THE NETHERLANDS

Record - 295

DE REEDE, R.H. 1982. A FIELD STUDY ON THE POSSIBLE IMPACT OF THE INSECTICIDE DIFLUBENZURON ON INSECTIVOROUS BIRDS. (AL) AGRO. ECOSYS. PG. 327-342.

Record - 296

DE REEDE, R.H. 1980. IMPACT OF THE INSECTICIDE DIFLUBENZURON ON INSECTIVOROUS BIRDS. (AL) INTEGRATED CONTROL OF INSECT PESTS IN THE NETHERLANDS/ EDITORS: A.K. MINKS AND P. GRUYS. PP 225-226. WAGENINGEN: CENTER FOR AGRICULTURAL PUBLISHING AND DOCUMENTATION, 1980.

Record - 297

DIFLUBENZURON AS A GRAIN PROTECTANT FOR CONTROL OF SITOPHILUS SPECIES

DESMARCHELIER J M; ALLEN S E

J STORED PROD RES 28 (4). 1992. 283-287.

Full Journal Title: Journal of Stored Products Research

Language: ENGLISH

ABSTRACT

Diffubenzuron, applied to wheat at low doses (0.2-0.6 mg kg⁻¹), prevents development of first generation (F1) progeny of *Sitophilus oryzae* and *S. granarius* species except those developing from a short period of oviposition (1-2 weeks) immediately after application. These F1 progeny fail to produce F2 progeny when transferred to wheat dosed with diffubenzuron, and produce very few progeny when transferred to untreated wheat suggesting an effect on fertility in the adult insect. At 30.degree.C, a dose of 0.4 mg kg⁻¹ is adequate to control *S. oryzae* and *S. granarius*, although a dose of 0.6 mg kg⁻¹ is required at 20.degree.C. Strategies for use of diffubenzuron are discussed.

Descriptors/Keywords: SITOPHILUS-ORYZAE, SITOPHILUS-GRANARIUS, INSECT, AGRICULTURE, OVIPOSITION PERIOD, INSECT GROWTH REGULATOR, FERTILITY EFFECTS, CROP INDUSTRY, INSECTICIDE, PESTS, PEST CONTROL, GRAIN PRODUCTS

Record - 298

INHIBITION OF CHITIN SYNTHESIS BY 2 1-2 6 DI SUBSTITUTED BENZOYL-3-PHENYL UREA INSECTICIDES PART 2

DEUL D H; DE JONG B J; KORTENBACH J A M

PESTIC BIOCHEM PHYSIOL 8 (1). 1978 98-105.

Full Journal Title: Pesticide Biochemistry and Physiology

Language: ENGLISH

ABSTRACT

The knowledge of the biochemical mode of action of 1-(4-chlorophenyl)-3-(2,6-difluorobenzoyl)urea (diffubenzuron) is presented, explaining the insecticidal effect. Like its structural analog, 1-(2,6-dichlorobenzyl)-3-(3,4-dichlorophenyl)urea (Du 19111), it inhibits chitin synthesis in the cuticle of larvae [*Pieris brassicae* L.]. Virtually complete inhibition was demonstrable 15 min after the application of diffubenzuron. Neither diffubenzuron nor Du 19111 has any effect upon chitinase (EC 3.2.1.14) activity either in vivo or in vitro. The insecticidal effect upon the cuticle, therefore, must be explained as an inhibition of chitin synthesis and not as an activation of chitin degradation. In contrast to the action of Du 19111, no accumulation of N-acetylglucosamine occurs upon treatment of larvae with diffubenzuron. Similarities and differences in the mode of action of both compounds are discussed, together with other effects reported in the literature.

Descriptors/Keywords: PIERIS-BRASSICAE, LARVAL CUTICLE, CHITINASE, EC-3.2.1.14, DIFLUBENZURON, 1-2 6 DI CHLOROBENZYL-3-3 4-DICHLOROPHENYL UREA

Record - 299

DEVANEY, J.A. AND L. F. KUBENA. 1982. EVALUATION OF DIFLUBENZURON AS A FEED ADDITIVE FOR CONTROL OF NORTHERN FOWL MITES. 1982 (*ORNITHONYSSUS SYLVIARUM*). INSECTICIDE AND ACARICIDE TEST. ENTOMOL. SOC. OF AMERICA, COLLEGE PARK, V. 7, 1982, P247.

Record - 300

DEGRADATION AND PERSISTENT TOXICITY OF DIFLUBENZURON AGAINST THREE STORED INSECT PESTS ON WHEAT

DHANASEKARAN S; SUNDARARAJAN R; PETER C

INDIAN J PLANT PROT 20 (1). 1992. 89-91.

Full Journal Title: Indian Journal of Plant Protection

Language: ENGLISH

Descriptors/Keywords: RHIZOPERTHA-DOMINICA, SITOPHILUS-ORYZAE, TRIBOLIUM-CASTANEUM, INSECTICIDE, TOXICITY, FOOD RESIDUE, INDIA

Record - 301

NOTE ON THE POSSIBLE USE OF MOULTING INHIBITOR IN MANAGEMENT OF BOLLWORMS ON COTTON

DHAWAN A K; SIMWAT G S; SIDHU A S

INDIAN J PLANT PROT 20 (1). 1992. 72-74.

Full Journal Title: Indian Journal of Plant Protection

Language: ENGLISH

Descriptors/Keywords: EARIAS-VITTELLA, EARIAS-INSULANA, PECTINOPHORA-GOSSYPIELLA, CROP YIELD LOSS, PEST CONTROL, INSECTICIDE, DIFLUBENZURON, INDIA

Record - 302

DILL, C.H. 1976. FIELD TEST WITH DIMILIN AGAINST MOSQUITO. REPORT THOMPSON-HAYWARD CHEMICAL COMPANY NO. C3742.

Record - 303

ANALYSIS OF DIFLUBENZURON RESIDUES IN ENVIRONMENTAL SAMPLES BY HIGH PRESSURE LIQUID CHROMATOGRAPHY

DIPRIMA S J; CANNIZZARO R D; ROGER J-C; FERRELL C D

J AGRIC FOOD CHEM 26 (4). 1978 968-971.

Full Journal Title: Journal of Agricultural and Food Chemistry

Language: ENGLISH

ABSTRACT

Residue methods for the routine analysis of diflubenzuron [insect growth regulator for insect control] in a wide range of samples from both agricultural and nonagricultural ecosystems were developed. The procedures involve Celite liquid-liquid partition, and Florisil-alumina-silica gel column chromatography, followed by detection using high-pressure liquid chromatography (HPLC) with a .mu.-Bondapak C-18 (reverse phase) or .mu.-Porasil (normal phase) column. The methods are reproducible and sensitive to 0.01 ppm in water and 0.05 ppm in soil, sediment, aquatic and forest foliage, fish and shellfish, agricultural crops, milks, eggs and animal tissues.

Descriptors/Keywords: FISH, SHELLFISH, ANIMAL TISSUES, INSECT CONTROL, GROWTH REGULATOR, MILK, EGGS, AGRICULTURAL CROPS

Record - 304

DIPRIMA, S. 1977. SPECIFICITY OF THOMPSON-HAYWARD ANALYTICAL METHOD NO. 22 FOR THE DETERMINATION OF DIFLUBENZURON RESIDUES IN CITRUS PRODUCTS AND PROCESS FRACTIONS: RESEARCH REPORT NO. SR-21. UNPUBLISHED STUDY RECEIVED DEC. 15, 1978 UNDER 148-EX-25; SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO.

Record - 305

DIPRIMA, S. 1977. SPECIFICITY OF THOMPSON-HAYWARD ANALYTICAL METHOD NO. 22 FOR THE DETERMINATION OF DIFLUBENZURON RESIDUES IN CITRUS PRODUCTS AND PROCESS FRACTIONS: RESEARCH REPORT NO. SR-21. UNPUBLISHED STUDY RECEIVED APR. 30, 1981 UNDER 148-1268; SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO.

Record - 306

DIPRIMA, S. 1976. DETERMINATION OF DIFLUBENZURON...RESIDUES IN SOYBEAN FOLIAGE AND SEED BY GAS CHROMATOGRAPHY: ANALYTICAL METHOD NO. 10. UNPUBLISHED STUDY RECEIVED JUL 19, 1976 UNDER 148-1262.

Record - 307

DIPRIMA, S. 1976. SPECIFICITY OF THOMPSON-HAYWARD ANALYTICAL METHOD NO. 10 FOR THE DETERMINATION OF DIFLUBENZURON RESIDUES IN SOYBEAN FOLIAGE AND SEED. REPORT NO. SR-1. UNPUBLISHED STUDY RECEIVED JUL. 19, 1976 UNDER 148-1262.

Record - 308

DIPRIMA, S. 1976. SPECIFICITY STUDY OF THOMPSON-HAYWARD ANALYTICAL METHOD NO. 3 FOR THE DETERMINATION OF DIFLUBENZURON RESIDUES IN ANIMAL TISSUES. RESEARCH REPORT NO. SR-4. UNPUBLISHED STUDY RECEIVED JUL. 19, 1976 UNDER 148-1262.

Record - 309

DIPRIMA, S. 1976. DETERMINATION OF DIFLUBENZURON (TH-6040), N-[4-CHLOROPHENYL) AMINOCARBONYL]-2, 6-DIFLUOROBENZAMIDE) RESIDUES IN COTTON FOLIAGE, SEED, AND PROCESS FRACTIONS (MEAL, OIL AND HULLS) BY GAS CHROMATOGRAPHY: ANALYTICAL METHOD NO. 20. UNPUBLISHED STUDY RECEIVED DEC. 23, 1976 UNDER 148-1258, SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO.

Record - 310

DIPRIMA, S. 1976. SPECIFICITY OF THOMPSON-HAYWARD ANALYTICAL METHOD NO. 20 FOR THE DETERMINATION OF DIFLUBENZURON RESIDUES IN COTTON SEED AND PROCESS FRACTIONS: RESEARCH REPORT NO. SR-5. UNPUBLISHED STUDY RECEIVED DEC. 23, 1976 UNDER 148-1258, SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO.

Record - 311

DIPRIMA, S. 1976. SPECIFICITY STUDY OF THOMPSON-HAYWARD ANALYTICAL METHOD NO. 3 FOR THE DETERMINATION OF DIFLUBENZURON RESIDUES IN ANIMAL TISSUES: RESEARCH REPORT NO. SR-4. UNPUBLISHED STUDY RECEIVED DEC. 23, 1976 UNDER 148-1258; SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO..

Record - 312

DIPRIMA, S. 1976. SPECIFICITY STUDY OF THOMPSON-HAYWARD ANALYTICAL METHOD NO. 7 FOR THE DETERMINATION OF DIFLUBENZURON RESIDUES IN COTTON FOLIAGE, SEED, AND PROCESS FRACTIONS: RESEARCH REPORT NO. SR-8. UNPUBLISHED STUDY RECEIVED DEC. 23, 1976 UNDER 148-1258, SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO.

Record - 313

DIPRIMA, S. 1976. HYDROLYTIC CONSISTENCY OF DIFLUBENZURON AND 4-CHLOROPHENYLUREA WITH 1.2 M HYDROCHLORIC ACID: RESEARCH REPORT NO. SR-E. THOMPSON-HAYWARD CHEMICAL CO.

Record - 314

DIPRIMA, S. 1976. EFFICIENCY OF DERIVATIZATION OF 4-CHLOROANILINE WITH HEPTAFLUOROBUTYRIC ANHYRIDE: RESEARCH REPORT NO. SR-2. UNPUBLISHED STUDY RECEIVED APR. 30, 1981 UNDER 148-1268; SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO.

Record - 315

DIPRIMA, S. 1976. DETERMINATION OF DIFLUBENZURON (TH-6040, N-(4-CHLOROPHENYL) AMINO]CARBONYL]-2, 6-DIFLUBENZAMIDE AND 4-CHLOROPHENYL-UREA RESIDUES IN ROTATIONAL CROPS BY GAS CHROMATOGRAPHY; ANALYTICAL METHOD NO. 12A. UNPUBLISHED REPORT RECEIVED DEC. 23, 1976 UNDER 148-1258; SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO.

Record - 316

DIPRIMA, S. 1975. DETERMINATION OF TH-6040 (N-(4-CHLOROPHENYL)- AMINOCARBONYL 1-2, 6-DIFLUOROBENZAMIDE) IN COTTON FOLIAGE, SEED, LINT, OIL, SOAPSTOCK MEAL AND HULLS. METHOD NO. 7. DATED DEC. 10, 1975. (UNPUBLISHED STUDY RECEIVED FEB. 10, 1976 UNDER 6G1744; SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO.

Record - 317

DIPRIMA, S. 1975. DETERMINATION OF TH-6040 (N-(4-CHLOROPHENYL)-AMINOCARBONYL 1-2, 6-DIFLUOROBENZAMIDE) IN COTTON FOLIAGE, SEED, LINT, OIL, SOAPSTOCK MEAL AND HULLS. METHOD NO. 7. DATED DEC. 10, 1975. (UNPUBLISHED STUDY RECEIVED FEB. 10, 1976 UNDER 6G1744; SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO.

Record - 318

DIPRIMA, S. 1975. DETERMINATION OF TH-6040 (N-(4-CHLOROPHENYL) AMINOCARBONYL 1-2, 6-DIFLUOROBENZAMIDE) IN COTTON FOLIAGE, SEED, LINT, OIL, SOAPSTOCK MEAL AND HULLS: ANALYTICAL METHOD NO. 7. UNPUBLISHED STUDY RECEIVED DEC. 23, 1976 UNDER 148-1258; PREPARED IN COOPERATION WITH CANNON LABORATORIES, SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO.

Record - 319

DIPRIMA, S. 1975. DETERMINATION OF TH-6040. IN COW TISSUES, POULTRY TISSUES, FISH, EGGS AND MILK; ANALYTICAL METHOD NO. 3. UNPUBLISHED STUDY RECEIVED JAN. 12, 1976 UNDER 148-1170; PREPARED IN COOPERATION WITH LABORATORIES, SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO.

Record - 320

DIPRIMA, S. 1975. DETERMINATION OF TH-6040 (N-(4-CHLOROPHENYL) AMINO CARBONYL-2, 6-DIFLUOROBENZAMIDE) IN FOREST FOLIAGE, FOREST LITTER, SOIL AND SEDIMENT. METHOD NO. 2. DATED OCT. 10, 1975. (UNPUBLISHED STUDY RECEIVED FEB. 10, 1976 UNDER 6G1744; SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO. KANSAS CITY.

Record - 321

DIPRIMA, S. 1975. DETERMINATION OF TH-6040 (N-(4-CHLOROPHENYL) AMINOCARBONYL-2, 6-DIFLUOROBENZAMIDE) IN COW TISSUES, POULTRY TISSUES, FISH, EGGS AND MILK. METHOD NO. 3. DATED NOV. 20, 1975. (UNPUBLISHED STUDY RECEIVED APR. 7, 1976 UNDER 148-1259;

PREPARED IN COOPERATION WITH CANNON LABORATORIES, SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO.

Record - 322

DIPRIMA, S. 1975. DETERMINATION OF TH-6040 (N-(4-CHLOROPHENYL)-AMINOCARBONYL-2, 6-DIFLUOROBENZAMIDE) IN COW TISSUES, POULTRY TISSUES, FISH, EGGS AND MILK. METHOD NO. 3. DATED NOV. 20, 1975. (UNPUBLISHED STUDY RECEIVED FEB. 10, 1976 UNDER 6G1744; SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO.

Record - 323

SMALL SCALE EVALUATION OF THE EFFICACY OF INSECT GROWTH REGULATORS ON LARVAE OF THE SIMULIUM DAMNOSUM COMPLEX DIPTERA SIMULIIDAE

DOANNIO J M C; DOSSOU-YOVO J; DUVAL J; HOUGARD J M

ANN SOC BELGE MED TROP 72 (3). 1992. 197-203.

Full Journal Title: Annales de la Societe Belge de Medecine Tropicale

Language: FRENCH

ABSTRACT

The efficacy of insect growth regulators was assessed in small scale tests on larvae of the *Simulium damnosum* complex (Diptera: Simuliidae) in the Ivory Coast. Three compounds [OMS 2015 (triflumuron), OMS 3009 (teflubenzuron), OMS 3013 (chlorfluazuron)] belong to the group of benzoylphenyl-urea substitutes; these IGR's are supposed to inhibit chitin synthesis. Two other compounds are Juvenile Hormone Analogs (JHA's) (OMS 3007 and OMS 3019). The last compound (OMS 3010) is a phenoxycarbamate. The first three compounds had a low efficacy on blackfly larvae, which is consistent with the literature data for another compound of this group: diflubenzuron. The other three compounds (OMS 3007, OMS 3010 and OMS 3019) were much more efficient, OMS 3010 and OMS 3019 showing high activity at low concentrations. These results would justify further studies on the effect of larval age and exposure parameters, and eventually full scale river tests.

Descriptors/Keywords: TRIFLUMURON, TEFLUBENZURON, CHLORFLUAZURON, JUVENILE HORMONE ANALOG, PHENOXYCARBAMATE

Record - 324

DOBROWSKI, C.J., JR. AND W. P. LAMBERT. 1985. DIMILIN: A PROFILE OF ITS BEHAVIOR IN THE ENVIRONMENT. US DEPT. OF AGRIC. CONTRACT NO. 53-6345-1-151.

Record - 325

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Record - 326

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Record - 327

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Record - 328

DOPPELREITER, H. AND M. KORIOTH. 1981. INHIBITION OF DEVELOPMENT BY THE SUBTERRANEAN TERMITES HETEROTERMES INDICOLA AND RETICULITERMES FLAVIPES CAUSED BY DIFLUBENZURON. J. OF APPL. ENTOMOL. 91 (2) PP 131-137. HAMBURG, PAUL PAREY.

Record - 329

DOST, F, S. WAGNER, J. WITT, ET AL. 1985. TOXICOLOGICAL EVALUATION OF DIMILIN (DIFLUBENZURON). UNPUBLISHED STUDY PREPARED BY OREGON STATE UNIV. 118 PP.

Record - 330

EFFECTS OF FIVE INSECT GROWTH REGULATORS ON LABORATORY POPULATIONS OF THE NORTH AMERICAN HOUSE-DUST MITE DERMATOPHAGOIDES FARINAE

DOWNING A S; WRIGHT C G; FARRIER M H

EXP APPL ACAROL 9 (1-2). 1990. 123-130.

Full Journal Title: Experimental & Applied Acarology

Language: ENGLISH

ABSTRACT

The potential of insect growth regulators (methoprene, hydroprene, fenoxycarb, diflubenzuron and triflumuron) to control populations of the North American house-dust mite *Dermatophagoides farinae* (Hughes) was assessed in laboratory bioassays. Methoprene was most effective at suppressing population growth, especially at concentrations of 1.0% (10,000 ppm) and 5.0% (5000 ppm) active ingredient. Hydroprene, structurally related to methoprene, also suppressed house-dust mite populations but not as consistently as methoprene. Fenoxycarb may be effective at controlling house-dust mites but at greater concentrations than were tested. Diflubenzuron and triflumuron, two chitin-synthesis inhibitors, failed to suppress mite numbers and may, in fact, stimulate reproduction in some cases. Almost all concentration of the insect growth regulators were shown to be ineffective when assayed 90 days after treatment.

Descriptors/Keywords: HUMAN ALLERGY, METHOPRENE, HYDROPRENE, FENOXYCARB, DIFLUBENZURON, TRIFLUMURON, CHEMICAL CONTROL, CHITIN-SYNTHESIS INHIBITION

Record - 331

EFFECT OF SOME PESTICIDES ON MICROORGANISMS ISOLATED FROM HONEY BEES

DROBNIKOVA V; BACILEK J

BULL ENVIRON CONTAM TOXICOL 29 (6). 1982. 734-738.

Full Journal Title: Bulletin of Environmental Contamination and Toxicology

Language: ENGLISH

Descriptors/Keywords: BACILLUS-BREVIS, BACILLUS-MACERANS, BACILLUS-LARVAE, MICROCOCCUS-VARIANS, ACINETOBACTER-SP, SCHIZOSACCHAROMYCES-SP, TORULOPSIS-VERSATILIS, CANDIDA-SHEHATAE, ALIMENTARY TRACT, FLORA CONTAMINATION, BIO MONITORING, FENITROTHION, PIRIMIPHOS-METHYL, PHOSALONE BROMOPHOS-ETHYL, EVISEKT, DIFLUBENZURON, PIRIMICARB, FOLPET, PHTHALIMIDE

Record - 332

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Record - 333

DUPHAR, B.V. 1985. DIMILIN: AN INSECTICIDE INTERFERING WITH CHITIN DEPOSITION.

Record - 334

PATTERN OF DISTRIBUTION OF PHOSPHORUS-32 LABELED STERILE MALE BOLL WEEVILS ANTHONOMUS GRANDIS DROPPED BY PLANE

EARLE N W; MCGOVERN W L; KEARNEY J F

J GA ENTOMOL SOC 14 (3). 1979. 269-277.

Full Journal Title: Journal of the Georgia Entomological Society

Language: ENGLISH

ABSTRACT

Boll weevils, *A. grandis* Boheman, were sterilized by .gamma.-irradiation in an atmosphere of N followed by a dip in an acetone solution of diflubenzuron. Both sexes were released, but only the males were tagged with ³²P. The weevils fell in a band no wider than 3 m when dropped over cotton from a plane flying at a height of 15 m. Many weevils landed on the ground and a good portion of these died during the next 2 days, especially in parts of the field where the plants offered the least shade. The acetone treatment may have partially inhibited flight capability, thereby preventing many weevils from reaching the cotton plants. Once the males began to feed, few of them moved from 1 row to the next.

Descriptors/Keywords: COTTON, DIFLUBENZURON, FLIGHT

Record - 335

MATING ABILITY OF IRRADIATED MALE BOLL WEEVILS TREATED WITH DIFLUBENZURON OR PENFLURON

EARLE N W; NILAKHE S S; SIMMONS L A

J ECON ENTOMOL 72 (3). 1979. 334-336.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Treatment of young males of *Anthonomus grandis grandis* Boheman with acetone solutions of diflubenzuron (Dimilin, TH-6040) or penfluron impaired mating ability. Mating success was often reduced by 40-50%. Affected males usually tried to copulate with virgin females but their movements were often poorly coordinated. They sometimes achieved a partial penetration of the aedeagus without transferring sperm. Males were unable to recover from this deficiency. This problem was largely eliminated when the males were allowed to age for at least 3 days before treatment. Diflubenzuron applied as a 0.1% acetone dip by itself failed to completely suppress the production of progeny by female. When combined with 8000 rad of gamma irradiation, progeny suppression was complete.

Descriptors/Keywords: ANTHONOMUS-GRANDIS-GRANDIS, COORDINATION, MOVEMENT, COPULATION, SPERM TRANSFER, AGE, PROGENY, SUPPRESSION

Record - 336

BOLL WEEVIL ANTHONOMUS GRANDIS-GRANDIS ABILITY TO FLY AFFECTED BY ACETONE IRRADIATION AND DIFLUBENZURON

EARLE N W; SIMMONS L A

J ECON ENTOMOL 72 (4) 1979. 573-575.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Observations in the field indicated that a large percentage of sterilized *A. grandis grandis* Boheman were unable to fly from the soil surface to nearby cotton plants. In laboratory tests, dipping in acetone or in an acetone solution of diflubenzuron reduced flight ability by approximately 40%. Irradiation alone did not affect flight, but joint treatment with irradiation plus acetone reduced number of flights by approximately 72%. Diflubenzuron reduced flight when fed to newly-emerged adults on 4 consecutive days but not when fed on the 4th day only. This delayed dietary treatment with diflubenzuron, combined with irradiation with 10 krad in N, effectively suppressed female fertility and had a minimal effect on flight ability and mating capability of males.

Descriptors/Keywords: COTTON, INSECT GROWTH REGULATOR, FERTILITY

Record - 337

PHEROMONE PRODUCTION AND STERILITY IN BOLL WEEVILS EFFECT OF ACUTE AND FRACTIONATED GAMMA IRRADIATION

EARLE N W; SIMMONS L A; NILAKHE S S; VILLAVASO E J; MCKIBBEN G H; SIKOROWSKI P

J ECON ENTOMOL 71 (4). 1978 591-595.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Each of 3 methods of irradiating male *Anthonomus grandis* Boheman resulted in a unique pattern of pheromone production over a 12 day observation period. Peak pheromone production occurred 4-6 days after treatment in males given a single large dose of gamma irradiation (acute irradiation) at the age of 4 days and in males given small increments of irradiation (fractionated irradiation) during the late pupal and early adult stages. Both groups produced much less pheromone during the next 3 days. The acute irradiated weevils, destined to die soon, produced no pheromone after the 9th day, whereas the fractionally irradiated males began to show a partial recovery. Males fractionally irradiated entirely during the adult stage produced a moderate but constant amount of pheromone during the entire 12 day period. Measurements of attractiveness of treated males placed in field traps produced results that were in general agreement with the laboratory data. Male sterility for all 3 treatments was .simeq. 99% and from 66-82% of the males were able to transfer sperm 7 days after treatment. Females irradiated during the pupal and adult stages were completely sterile, producing no eggs. The 2 groups of females irradiated as adults produced some eggs and it was necessary to incorporate a dip treatment consisting of 0.02% diflubenzuron (Dimilin; N-[[[4-chlorophenyl] amino] carbonyl]-2,6-difluorobenzamide) in acetone to suppress viability.

Descriptors/Keywords: ANTHONOMUS-GRANDIS, DIFLUBENZURON, N-4 CHLOROPHENYLAMINOCARBONYL-2,6-DIFLUORO BENZAMIDE, FIELD TRAPS, DIP TREATMENT, VIABILITY

Record - 338

ECK, W.H. VAN. 1981. POSSIBLE MECHANISMS OF THE DIFFERENCE IN SENSITIVITY OF CATERPILLARS OF *ADOXOPHYES ORANA* AND *LASPEYRESIA POMOELLA* TO (THE SELECTIVE INSECTICIDE) DIFLUBENZURON. ENTOMOLOGISCHE EXPERIMENTALIS ET APPLICATA. 29 (1) PP 60-68.

Record - 339

ECK, W.H. VAN AND F. J. OPPENOORTH. 1980. MODE OF ACTION OF DIFLUBENZURON (IN TREATED LARVAE OF *PIERIS BRASSICAE*). INTEGRATED CONTROL OF INSECT PEST IN THE NEETHERLANDS. EDITORS: A.K. MINKS AND P. GRUYS. PP 223-224. WAGENINGEN: CENTRE FOR AG. PUB. AND DOCUMENTATION.

Record - 340

EDWARDS, C.A AND J. R. LOFTY. 1975. ECOLOGICAL EFFECTS ON THE SOIL FAUNA OF DIFLUBENZURON (DIMILIN), AN INSECT DEVELOPMENT INHIBITOR. UNPUBLISHED STUDY RECEIVED APR. 7, 1976 UNDER 148-1259; PREPARED BY ROTHAMSTED EXPERIMENTAL STATION, ENGLAND, SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 341

EGGER, A. 1978. EFFECTS OF (THE INSECTICIDE) DIMILIN ON THE CARNIOLAN HONEY BEE APIS MELLIFERA CARNICA."; BIENENWELT 20 (7) PP 146-149.

Record - 342

EGGER, A. 1975. THE SIDE EFFECTS OF DIMILIN ON HONEY BEES, APIS MELIFERA, INVESTIGATION IN RELATION TO AIRPLANE APPLICATION IN FOREST (TO CONTROL PRISTIPHORA ABIETINA). CENTRALBL GESMATE FORSTWES 94 (2): 65-72. ENG. SUM.

Record - 343

DIFLUBENZURON HAZARDS TO FISH WILDLIFE AND INVERTEBRATES A SYNOPTIC REVIEW

EISLER R

U S FISH WILDL SERV BIOL REP 4 (25). 1992. I-III, 1-36.

Full Journal Title: U S Fish and Wildlife Service Biological Report

Language: ENGLISH

ABSTRACT

Diflubenzuron(1-(4-chlorophenyl)-3-(2,6-difluorobenzoyl)urea), also known as dimilin, is a potent broad-spectrum insect growth regulator that interferes with chitin synthesis at time of molting and is effective in controlling immature stages of insects. Diflubenzuron seldom persists for more than a few days in soil and water. When used properly in forest management, it is unlikely to be leached into ground water from the application site. Degradation in water and soils is most rapid when small particle formulations are applied; microorganisms are abundant; and at elevated pH, temperature, and organic loading. Chemical and biological processes initially yield 2,6-difluorobenzoic acid and 4-chlorophenylurea. Soil degradation processes and plant and animal metabolism involve further conversion of these compounds to 2,6-difluorobenzamide and 4-chloroaniline. Ultimately, the end products are either conjugated into mostly water soluble products or biologically methylated. Diflubenzuron applied to foliage of terrestrial plants tends to remain adsorbed for several weeks with little or no absorption or translocation from plant surfaces; loss occurs mainly from wind abrasion, rain washing, or shedding of senescent leaves. Among terrestrial insects, there is great variability in sensitivity to diflubenzuron. Sensitive pestiferous species of insects die at topical applications of 0.003-0.034 .mu.g per larvae or after consuming diets containing 0.1 mg/kg. Some beneficial insects, such as the honey bee (*Apis mellifera*), are adversely affected at 1 mg/kg fresh weight (FW) of diet. Diflubenzuron application rates between 28 and 56 g/ha (0.025-0.05 pounds per acre) or 2.5 to 16 .mu.g/L are highly effective against pestiferous aquatic dipterans, including representative chaoborids, chironomids, and culicids. These same dosages temporarily suppress nontarget populations of cladocerans, copepods, mayfly nymphs, corixids, and springtails; population recovery is usually complete within 80 days. Adverse effects on crustacean growth, survival, reproduction, and behavior occur between 0.062 and 2 .mu.g/L. Next in sensitivity are mayflies, chironomids, caddisflies, and midges; concentrations between 0.1 and 1.9 .mu.g/L produce low emergence and survival. Moderately resistant to diflubenzuron are larvae of diving beetles, dragonfly adults and naiads, ostracods, spiders, backswimmers, and water boatmen. Relatively tolerant of diflubenzuron (i.e., no observable adverse effects at .ltoreq. 45 .mu.g/L) are the algae, molluscs, fishes, and amphibians. High accumulations occur on some aquatic plants during exposure to 100 .mu.g/L and in

fish during exposure to 1 to 13 .mu.g/L, but all species in these groups seem unaffected by elevated body burdens and grow and metabolize normally. Birds seem comparatively resistant to diflubenzuron: acute oral LD50 doses exceed 2,000 mg/kg body weight (BW); dietary concentrations < 4,640 mg/kg FW are tolerated for at least 8 days; and forest birds seem unharmed by recommended diflubenzuron application procedures to control pestiferous insects. Studies on small laboratory animals and domestic livestock indicate no observable effects in cows (*Bos bovis*) rabbits (*Oryctolagus cuniculus*) dogs (*Canis familiaris*) and rats (*Rattus* spp.). All experimental studies conducted with laboratory animals indicate that diflubenzuron is nonmutagenic, nonteratogenic, and noncarcinogenic. Adverse effects occur in dogs fed diets containing 160 mg/kg (6.2 mg/kg BW daily) for 13 weeks (abnormal blood chemistry), in mice (*Mus* spp.) given 125 mg/kg BW daily for 30 days (hepatocellular changes), in rabbits fed diets of 640 mg/kg for 3 weeks (abnormal hemoglobin), and in rats given 5,000 mg/kg BW daily for 13 weeks (abnormal hemoglobin). Elevated tissue residues-but no other measurable effects-occur in cows given 0.05 to 0.5 mg/kg ration for 28 days or 1 to 16 mg/kg BW for 4 months, in pigs (*Sus* spp.) given a single oral dose of 5 mg/kg BW, and in sheep (*Ovis aries*) given a single oral dose of 10 mg/kg BW. Criteria now recommended for protection of various species include the following: dietary loadings, in mg/kg FW ration, of < 0.05 for human health, < 0.05 for livestock, < 1 for honey bees, and < 5 for poultry; seawater concentrations < 0.1 .mu.g/L for estuarine crustacean larvae; and, for all aquatic life, restricted or prohibited use of diflubenzuron in salt-marsh mosquito breeding areas and on agricultural lands less than 5 km from coastal areas. No criteria are available or proposed for protection of avian and mammalian wildlife against diflubenzuron, probably because of an incomplete toxicological data base.

Descriptors/Keywords: OVIS-ARIES, SUS-SPP, MUS-SPP, RATTUS-SPP, CANIS-FAMILIARIS , ORYCTOLAGUS-CUNICULUS, BOS-BOVIS, APIS-MELLIFERA, NON-TARGET ORGANISMS, DIMILIN, BENZOYLPHENYL UREA, INSECT GROWTH REGULATOR, INSECT CONTROL AGENT, LEACHING, GROUNDWATER DEGRADATION, ECOTOXICOLOGY

Record - 344

EWISL, H. AND S. HOYING. 1978. EFFICACY AND SIDE EFFECTS OF PSYLLA AND CODLING MOTH CONTROL PROGRAMS. SUBMITTER NO. 4780 (UNPUBLISHED STUDY RECEIVED FEB. 13, 1979 UNDER 148-EX-26; PREPARED BY UNIV. CALIF.-BERKLEY, DEPT OF ENTOMOL., SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 345

ELBAHRAWI, A., A.S.A. SAAD AND S. S. SOLIMAN. 1979. DIMILIN, UREA GROWTH REGULATOR FOR CONTROL OF BROWN TAIL MOTH EUPROCTIS MELANIA STAUD (PEST OF DECIDUOUS SHADE AND FRUIT TREES) IN IRAQ.; INTL. SYMP. ON CROP PROTECTION 31ST GENT 1979. MEDELINGEN VAN DE FACULTEIT LANDBOUW WETENSCHAPPEN RIJKSUNIVERSITEIT, V 44 (1), 1979, PP 31-37.

Record - 346

OVICIDAL EFFECTS OF CERTAIN PESTICIDES ON THE TWO SPOTTED SPIDER MITE TETRANYCHUS URTICAE AND THE PREDACIOUS MITE AMBLYSEIUS GOSSIPI ACARI TETRANYCHIDAE PHYTOSEIIDAE

EL-BANHAWY E M; REDA A S

INSECT SCI APPL 9 (3). 1988. 369-372.

Full Journal Title: Insect Science and its Application

Language: ENGLISH

ABSTRACT

Different ages of the two spotted spider mite *Tetranychus urticae* Koch and the predacious mite *Amblyseius gossipi* El-Badry eggs were exposed to selected concentrations of cypermethrin (500 ppm), flucythrinate (200 ppm), cufluthrin (100 ppm), fenvalerate (200 ppm). Pyridaphenthion (25 ppm),

dicofol (250 ppm), avermectin (10 ppm), and dimilin (50 ppm). Generally, the synthetic pyrethroids were effective on eggs especially those of *A. gossipi*. Dicofol was rather toxic to *T. urticae* eggs, while avermectin was only effective on older eggs of both species. Eggs treated with different pesticides at large stages took longer to hatch, particularly in the case of *A. gossipi*.

Descriptors/Keywords: CYPERMETHRIN, FLUCYTHRINATE, CYFLUTHRIN, FENVALERATE, PYRIDAPHENTHION, DICOFOL, AVERMECTIN, DIMILIN

Record - 347

EL-BANHAWY, E.M. 1980. COMPARISON BETWEEN THE RESPONSE OF THE PREDACIOUS MITE AMBLyseius BRAZILLI AND ITS PREY TETRANYCHUS DESETORUM TO THE DIFFERENT IGRS (INSECT GROWTH REGULATOR) METHOPRENE AND DIMILIN (ACARI: PHYTOSEIIDAE, TETRANYCHIDEA). ACAROLOGIA 21 (2):221-227.

Record - 348

POTENTIATION BETWEEN BENZOYLPHENYL UREAS IN RELATION TO THE CABBAGE APHID BREVICORYNE BRASSICAE L

EL-BERMAWY Z A; DARWISH E T E; EL-SHEIKH A E A; FARAG A I; RADWAN H S A
J APPL ENTOMOL 104 (2). 1987. 186-190.

Full Journal Title: Journal of Applied Entomology

Language: ENGLISH

ABSTRACT

The activity of 2 benzoylphenyl ureas, Diflubenzuron and Triflumuron alone in addition to the joint action for 5 of their binary combination at different mixing ratios, was assayed through continuous exposure of the green cabbage aphid *Brevicoryne brassicae* (L.) 3rd instar larvae to treated cabbage leaves. Combinations of both IGRs at different mixing ratios were more active and revealed, in general, accumulated mortality percentages during immature and adult stages much higher than that of each IGR alone at the same testing level of 0.1 or 0.05 ppm. Also, different experimental combinations disrupted aphid development much more than within each IGR alone and resulted in less number of individuals that succeeded to develop as adults. Likewise, the reproductive potentiality of the produced adults as well as survival of their resulting off-spring was adversely affected, relatively more within different combinations than with each IGR alone. However, in particular, Diflubenzuron/Triflumuron at mixing ratio of 4:1 exhibited the maximum bioactivity in this respect.

Descriptors/Keywords: LARVA DEVELOPMENT, MORTALITY, REPRODUCTIVE POTENTIALITY, DIFLUBENZURON, TRIFLUMURON, INSECT GROWTH REGULATOR

Record - 349

ACTIVITY OF CHITIN SYNTHESIS INHIBITORS ON THE CAT FLEA CTENOCEPHALIDES FELIS BOUCHE

EL-GAZZAR L M; PATTERSON R S; KOEHLER P G
J AGRIC ENTOMOL 5 (2). 1988. 117-120.

Full Journal Title: Journal of Agricultural Entomology

Language: ENGLISH

ABSTRACT

Three chitin synthesis inhibitors, alsystin, diflubenzuron, and cyromazine were tested against cat flea, *Ctenocephalides felis* Bouche, larvae. The chemicals were incorporated into the larval rearing media of 1.5, 2.5, and 3.5 day-old larvae. LC50's of 0.36, 0.09, and 0.94 ppm for alsystin, diflubenzuron, and cyromazine, respectively, were determined by probit analysis. As larval age increased, susceptibility to these chemicals decreased with diflubenzuron and cyromazine being toxic only when applied to the first two ages.

Descriptors/Keywords: LARVA, ALSYSTIN, DIFLUBENZURON, CYROMAZINE, JUVENILE HORMONE INHIBITORS, SUSCEPTIBILITY, MASS REARING

Record - 350

THE IMPACT OF SEVERAL SELECTION PROCEDURES ON RESISTANCE TO MONOCROTOPHOS DIFLUBENZURON AND METHOPRENE IN THE COTTON LEAFWORM SPODOPTERA LITTORALIS BOISD

EL-GUINDY M A; EL-REFAI A M; EL-SAMADESY A M; GHONEIM Y F

INT PEST CONTROL 32 (3). 1990. 72-76.

Full Journal Title: International Pest Control

Language: ENGLISH

ABSTRACT

Cotton, the most important economic crop in Egypt, is usually infested by several pests in early, mid and late season. The cotton leafworm, *Spodoptera littoralis* Bois, is a notorious midseason cotton pest and usually inflicts considerable damage during May and June. If it is not adequately controlled, its damage extends into July, August and September during which late season pests such as the bollworm are most abundant. Due to the fact that the cotton leafworm is now resistant to several groups of insecticides, the methods of hand picking egg-masses, usually used in cotton, is considered the most effective way to combat the pest and reduce its infestation level below the economic threshold. Hatches resulting from remaining egg-masses continue to infest cotton, together with the bollworms, until late in the season but, nonetheless, they are being controlled in a regime directed to combat both pests. After the adoption of such a regime for 14 years, it is becoming less efficient in reducing resistance to insecticides. The present work is an attempt to study new resistance delaying tactics as a means of averting the evolution of resistance in *Spodoptera littoralis*.

Descriptors/Keywords: INSECT, PLANT PESTS, INSECTICIDE, AGRICULTURE, CROP INDUSTRY

Record - 351

INSECT GROWTH REGULATORS AS SUPPRESSORS TO INSECTICIDE RESISTANCE IN A FENVALERATE RESISTANT STRAIN OF SPODOPTERA LITTORALIS BOISD

EL-GUINDY M A; ISSA Y H; EL-MALLA M A; EL-GHAR M R A

BULL ENTOMOL SOC EGYPT ECON SER 0 (14). 1984-1985. 373-384.

Full Journal Title: Bulletin of the Entomological Society of Egypt Economic Series

Language: ENGLISH

ABSTRACT

The effect of pre-treatment with the insect growth regulators methoprene and diflubenzuron on the pattern of cross-resistance of a fenvalerate resistant *Spondoptera littoralis* strain to insecticides was investigated. Checks for cross-resistance were carried out in the next filial generation after treatment of certain insect stages with either compound. The results revealed that eggs treated with methoprene or diflubenzuron fairly reduced cross-resistance levels to several insecticides, however, resistance ratios for phosfolan, endrin and methomyl decreased to appreciable rates with methoprene treatment. Prominent to slight reduction in resistance ratios were observed to several insecticides when methoprene was applied on 2 day-old 6th instar larvae and 2 day-old pupae, respectively. However, the potencies of only a small number of insecticides were not affected by such treatments. Treatment of the 4th instar larvae with diflubenzuron resulted into appreciable to moderate rates of reduction in resistance to most of the insecticides used. The same treatment when applied to various insect stages of the susceptible strain did not affect much the potencies of the insecticides tested against 4th instar larvae of the resulting generation.

Descriptors/Keywords: EGG, LARVAE, TOXICITY, CROSS-RESISTANCE, PHOSFOLAN, ENDRIN, METHOMYL, DIFLUBENZURON

EFFECT OF PRE-TREATMENT WITH METHOPRENE OR DIFLUBENZURON ON THE RESPONSE OF SPODOPTERA LITTORALIS BOISD. SUSCEPTIBLE AND FENITROTHION-RESISTANT STRAIN TO INSECTICIDES

EL-GUINDY M A; EL-MALLA M A; ISSA Y H; EL-GHAR M R A

BULL ENTOMOL SOC EGYPT ECON SER 0 (14). 1984-1985 . 359-372.

Full Journal Title: Bulletin of the Entomological Society of Egypt Economic Series

Language: ENGLISH

ABSTRACT

Various insect stages of a fenitrothion-resistant *Spodoptera littoralis* strain were exposed to the juvenoid methoprene and the chitin inhibitor diflubenzuron. Fourth instar larvae resulting from the different treatments were examined in the next filial generation for the pattern of cross-resistance to several insecticides. When eggs of the resistant strain were treated with methoprene cross-resistance to several insecticides decreased to appreciable levels. However, treatment of the 2 day-old 6th instar larvae with the same chemical slightly decreased the resistance ratios. Two day-old pupae exposed to the action of methoprene satisfactorily enhanced the potencies of most of the insecticides tested on the resulting generation. In comparison diflubenzuron applied to eggs or 4th instar larvae slightly lowered the levels of resistance. On the other hand, the same treatments when applied on the various stages of the susceptible strain did not affect much the potencies of the insecticides tested against the 4th instar larvae of the resulting generation.

Descriptors/Keywords: LARVAE, CROSS-RESISTANCE, TOXICITY, CHITIN INHIBITION

ON THE INTERACTION OF THE INSECTICIDES AND INSECT GROWTH REGULATORS ON THE BIOTIC AND REPRODUCTIVE POTENTIAL OF DIFLUBENZURON SUSCEPTIBLE AND RESISTANT STRAINS OF SPODOPTERA LITTORALIS

EL-GUINDY M A; ABDEL-SATTAR M M; EL-REFAI A M

Z ANGEW ENTOMOL 95 (1). 1983. 75-83.

Full Journal Title: Zeitschrift fuer Angewandte Entomologie

Language: ENGLISH

ABSTRACT

The pyrethroid cypermethrin when applied to the 4th instar larvae of a diflubenzuron susceptible strain of *S. littoralis* produced the highest percentage of total loss followed by methomyl then fenvalerate. Treatment of 2 day-old pupae of the same strain with the juvenoids methoprene and triprene produced higher percentages of adult sterility as compared with the insecticides applied on the 4th instar larvae. Pre-treatment of the newly hatched larvae with diflubenzuron followed by post-treatment with the insecticides on the 4th larval instar, decreased the percentages of total loss previously obtained in treatments with the insecticides cypermethrin or methomyl alone; it slightly increased with fenvalerate. Post-treatment with the juvenoids on 2 day-old pupae surviving diflubenzuron treatment increased the percentages of total loss. The percentages of adult sterility apparently increased with post-treatment with the insecticides on the 4th instar larvae, while it decreased with post-treatment with the hormones on 2 day-old pupae. Post-treatment of 2 day-old pupae of the susceptible strain with the juvenoids after pre-treatment with either the insecticides to the 4th instar larvae, or with diflubenzuron to the newly hatched larvae followed by the insecticides on the resulting 4th larval instar, reduced to various levels their action on the biotic and reproductive potential of the insect. The diflubenzuron resistant strain was capable to tolerate the types of interaction which occur between diflubenzuron, the insecticides and the hormones that affect the biotic and reproductive potential of the susceptible strain.

Descriptors/Keywords: CYPERMETHRIN, METHOMYL, FENVALERATE, METHOPRENE, TRIPRENE, JUVENOID, STERILITY

Record - 354

THE OVICIDAL ACTION OF INSECTICIDES AND INSECT GROWTH REGULATOR
INSECTICIDE MIXTURES ON THE EGGS OF VARIOUS AGES OF SUSCEPTIBLE AND
DIFLUBENZURON RESISTANT STRAINS OF SPODOPTERA LITTORALIS

EL-GUINDY M A; ABDEL-SATTAR M M; EL-REFAI A R M

PESTIC SCI 14 (3). 1983. 253-260.

Full Journal Title: Pesticide Science

Language: ENGLISH

ABSTRACT

The ovicidal actions (separately and in combination) of 4 insecticides and 3 insect growth regulators (IGR) on eggs of the susceptible (S) strain of *S. littoralis*, were investigated. The IGRs were diflubenzuron, triprene and methoprene. The insecticides were chlorpyrifos, cypermethrin, fenvalerate and methomyl. Synergism, antagonism, additive effects and differing susceptibilities at different age of eggs are revealed.

Descriptors/Keywords: JUVENOID, DIFLUBENZURON, SYNERGIST

Record - 355

THE PATTERN OF CROSS RESISTANCE TO INSECTICIDES AND JUVENILE HORMONE
ANALOGS IN A DIFLUBENZURON RESISTANT STRAIN OF THE COTTON LEAFWORM
SPODOPTERA LITTORALIS

EL-GUINDY M A; ABDEL-SATTAR M M; EL-REFAI A R M

PESTIC SCI 14 (3). 1983. 235-245.

Full Journal Title: Pesticide Science

Language: ENGLISH

ABSTRACT

The rate of development of resistance to diflubenzuron in a laboratory susceptible strain of the cotton leafworm, *S. littoralis* Boisd., the pattern of cross-resistance exhibited by the resistant strain to several insecticides and juvenile hormone analogs, and the synergistic action of piperonyl butoxide (PB) and S,S,S-tributyl phosphorotrithioate (TBP) with insecticides or diflubenzuron on both strains were investigated. Resistance to diflubenzuron increased slightly in the first 8 selected generations and was enhanced by further selection until, in generation 30, the selected strain attained the high level of resistance of 290.7-fold, compared with the parent strain. The resistant strain when challenged with either insecticides or juvenile hormone analogs at selected generations (5, 10, 15, 20, 25 and 30) exhibited different levels of resistance to several insecticides, representing organochlorine and organophosphorus compounds, carbamates and pyrethroids; however, a clear case of negative correlation was indicated between resistance to diflubenzuron and juvenile hormone analogs. With regard to the synergistic action of PB and TBP on the toxicity of either diflubenzuron or insecticides against the 4th-instar larvae of the susceptible strain, methomyl showed slight levels of synergism when it was combined with them. With the exception of cypermethrin, which was not affected by the 2 synergists, lower levels of synergism were observed with the compounds endrin, diflubenzuron and fenvalerate when they were combined with the same synergists. These 2 synergists antagonized the toxic action of the organophosphorus compounds, phosfolan and chlorpyrifos. Against the resistant strain, endrin was moderately synergized by TBP but only slightly by PB. Slight levels of synergism were observed when methomyl, phosfolan and diflubenzuron were combined with either synergist, but both antagonized chlorpyrifos and fenvalerate. Resistance to diflubenzuron and to the other tested chemicals in the resistant strain was scarcely affected by the 2 synergists.

Descriptors/Keywords: PYRETHROID, ORGANO PHOSPHATE, CARBAMATE, ORGANO CHLORINE, PIPERONYL BUTOXIDE, S S S TRI BUTYL PHOSPHOROTRITHIOATE, SYNERGIST

Record - 356

EL-GUINDY, M.A., M. M. ABDEL-SATTAR, S. M. A. DOGHEIM, S. M. MADI, S.M. AND M. R. S. EL-ASSAR. 1983. LABORATORY EVALUATION OF THE INSECT GROWTH REGULATOR DIMILIN (TH-6040) AGAINST SUSCEPTIBLE AND RESISTANT STRAINS OF SPODOPTERA LITTORALIS (BOISD). INTERNATIONAL PEST CONTROL. 25 (2) : 48-51.

Record - 357

THE JOINT ACTION OF MIXTURES OF INSECTICIDES OR OF INSECT GROWTH REGULATORS AND INSECTICIDES ON SUSCEPTIBLE AND DIFLUBENZURON RESISTANT STRAINS OF SPODOPTERA LITTORALIS

EL-GUINDY M A; EL-REFAI A R M; ABDEL-SATTAR M M

PESTIC SCI 14 (3). 1983. 246-252.

Full Journal Title: Pesticide Science

Language: ENGLISH

ABSTRACT

The joint action of insecticides, or of mixtures of insect growth regulators and insecticides, on the susceptible (S) strain and diflubenzuron-resistant (Rd) strain of the cotton leafworm, *S. littoralis* Boisd, was investigated. The joint action of the insecticides and/or insect growth regulator mixtures was determined by mixing them in proportion to their activity equivalents at the LD25 or ED25 levels. A total of 15 mixtures of 2 synthetic pyrethroids, 2 organophosphorus, 1 carbamate and 1 organochlorine insecticides were applied to the 4th-instar larvae of the S and Rd strains. The insecticide mixtures cypermethrin/methomyl and cypermethrin/endrin exhibited high and moderate levels of synergism on the S strain, respectively. The mixtures chlorpyrifos/methomyl, phosfolan/methomyl, and phosfolan/endrin produced antagonism, while the other mixtures showed varying levels of additive effects. The response of the 4th-instar larvae of the S strain to the joint action of diflubenzuron/juvenoid, diflubenzuron/insecticide, or insecticide/juvenoid mixtures revealed that diflubenzuron produced high levels of synergism when combined with methoprene and progressively less with fenvalerate, methomyl and cypermethrin. The mixture diflubenzuron/triprene was antagonistic. Fenvalerate with the 2 juvenoids produced synergism while methomyl showed an additive effect with methoprene. The mixtures cypermethrin/methoprene, cypermethrin/triprene and methomyl/triprene produced antagonism. The mixtures that produced potentiation on the 4th-instar larvae of the S strain lost their high potency when tested against the Rd strain. Insecticide/juvenoid mixtures, when applied on 2-day-old pupae of the S strain, were synergistic, except in the case of cypermethrin/methoprene and methomyl/triprene mixtures, for which additive effects were observed. When the mixtures that had synergistic effects on the S strain were tested on the Rd strain, their synergistic effects were apparently reduced. The generalized levels of tolerance in the Rd strain towards various compounds may have influenced the several defence mechanisms to act against the synergistic action of the chemical mixtures.

Descriptors/Keywords: CARBAMATE, ORGANO CHLORINE ORGANO PHOSPHATE, JUVENOID, PYRETHROID, SYNERGIST

Record - 358

AN ANALYSIS OF THE SWIMMING BEHAVIOR OF FISH EXPOSED TO THE INSECT GROWTH REGULATORS METHOPRENE AND DIFLUBENZURON

ELLGAARD E G; BARBER J T; TIWARI S C; FRIEND A L

MOSQ NEWS 39 (2). 1979. 311-314.

Full Journal Title: Mosquito News

Language: ENGLISH

ABSTRACT

Locomotor activities of mosquitofish (*Gambusia affinis*) and goldfish (*Carassius auratus*) were monitored for a 2-wk period in the presence of insect growth regulators, at concentrations approximately

10-fold greater than those generally recommended for application. Methoprene, the active ingredient in Altosid SR-10, at 0.2 ppm did not significantly alter the locomotor activity of either mosquitofish or goldfish. Diflubenzuron (trade name, Dimilin) at 0.2 ppm caused a temporary hyperactivity in mosquitofish. Within 2 days following exposure the fish became about 2.5 times more active than controls. Maximum activity was observed on days 4 through 8 when they were 4 times as active as controls. Activity then decreased to control levels by day 14, suggesting that the mosquitofish were able to adjust to or compensate for the presence of diflubenzuron.

Descriptors/Keywords: HYPERACTIVITY

Record - 359

ELLIOTT, P.W. 1975. TUSsock Moth and False Hemlock Looper Experimental Spray Program (TH-60-40--CHLORINATED UREA): EVALUATION OF THE EFFECTS OF THIS CHEMICAL UPON THE SMALL MAMMALS OF THE KAMLOOPS AREA. UNPUBLISHED STUDY RECEIVED FEB. 10, 1976 UNDER 6G1744; SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 360

FACTORS INFLUENCING THE ACTIVITY OF DIFLUBENZURON AGAINST THE CODLING Moth LASPEYRESIA POMONELLA LEPIDOPTERA OLETHREUTIDAE

ELLIOTT R H; ANDERSON D W

CAN ENTOMOL 114 (3). 1982. 259-268.

Full Journal Title: Canadian Entomologist

Language: ENGLISH

ABSTRACT

Codling moth eggs were very sensitive to diflubenzuron (Dimilin), particularly when treated topically shortly after oviposition. Regression analysis showed a linear relationship between percent hatch and the age at which the eggs were treated with diflubenzuron. The LC50 values for 0-2.50 and 3-day eggs were 1.1 and 17.2 ppm, respectively. Egg hatch was also inversely related to the length of time the chorion was in contact with the diflubenzuron solution. When the compound had dried on fruit or foliage, residual activity against the eggs was excellent and did not decrease markedly over a 10-day period. The surfactant, Tween 20, enhanced the contact ovicidal activity of diflubenzuron especially on older eggs. Tween 20 also improved the residual activity of diflubenzuron on foliage and immature apples but not waxy mature apples. Diflubenzuron incorporated into artificial diet was toxic to 1st- and 2nd-instar larvae. The LC50s for the 2 instars were 48.2 and 8.1 ppm, respectively. When 1st instars fed on diflubenzuron + Tween 20-treated foliage for 2 days, larval entry into apples was not impaired, but subsequent larval survival was reduced significantly. Neither fruit entry nor larval survival was affected when 1st instars were reared on apples which had been dipped in 500 ppm diflubenzuron - Tween 20. Adult codling moths dipped in or fed diflubenzuron solutions showed no marked adverse effects although marginal reductions in egg viability were observed.

Descriptors/Keywords: APPLE, FRUIT RESIDUAL, ACTIVITY, LC-50, SURFACTANT, TWEEN 20, EGG VIABILITY, ARTIFICIAL DIET

Record - 361

TOXICITY OF DIFLUBENZURON TO NYMPHS OF THE MIGRATORY GRASSHOPPER MELANOPLUS SANGUINIPES ORTHOPTERA ACRIDIDAE

ELLIOTT R H; IYER R

CAN ENTOMOL 114 (6). 1982. 479-484.

Full Journal Title: Canadian Entomologist

Language: ENGLISH

ABSTRACT

Laboratory tests showed that nymphs of the migratory grasshopper are very sensitive to diflubenzuron (Dimilin) when reared continuously on treated wheat seedlings or artificial diet and fresh lettuce. At concentrations of 10 ppm or above, diflubenzuron completely inhibited molting of 2nd-instar nymphs. With continuous exposure on treated wheat seedlings, the LC90 values after 8, 12 and 20 days were 10.0, 2.4 and 0.8 ppm, respectively. Comparable values were obtained with the artificial diet and lettuce. When 2nd instars were placed on diflubenzuron-treated wheat foliage for 1 day then transferred onto untreated plants, toxicity declined markedly. Although the toxic effects of diflubenzuron were delayed, dry weight determinations on wheat seedlings indicated that nymphal feeding damage was insignificant if the plants were sprayed with 10 ppm diflubenzuron. The potential field use of diflubenzuron against stationary and mobile grasshopper nymphs is discussed.

Descriptors/Keywords: WHEAT, LETTUCE, MOLT, TOXICITY

Record - 362

JOINT ACTION OF FOLIAR FERTILIZERS INSECTICIDE MIXTURES ON COTTON
LEAFWORM SPODOPTERA LITTORALIS BOLL WORMS AND YIELD OF COTTON PLANTS
*EL-NAWAWY A S; ASHRY M A; LAMIE O; ABBASSY M; ZEIN A; MASSOUD A H; EL-HAF
EZ A G A*

34TH INTERNATIONAL SYMPOSIUM ON CROP PROTECTION, PART 2. MEDED FAC
LANDBOUWWET RIJKSUNIV GENT 47 (2). 1982 . 617-626.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: PECTINOPHORA-GOSSYPIELLA, EARIAS-INSULANA, ORGANO
PHOSPHATE INSECTICIDE, PYRETHROID, COMPELSAL, STEMFOL DIFLUBENZURON, EGYPT

Record - 363

FIELD TRIAL OF THE INSECT GROWTH REGULATOR DIMILIN FOR CONTROL OF
ANOPHELES PHAROENSIS IN GEZIRA SUDAN

EL SAFT S H; HARIDI A M

J AM MOSQ CONTROL ASSOC 2 (3). 1986. 374-375.

Full Journal Title: Journal of the American Mosquito Control Association

Language: ENGLISH

Descriptors/Keywords: DIFLUBENZURON

Record - 364

EFFECT OF DIFLUBENZURON ON GROWTH DEVELOPMENT AND DIGESTIVE ENZYMES IN
SPODOPTERA LITTORALIS BOISD

EL SAIDY M F; DEGHEELE D

INTERNATIONAL SYMPOSIUM ON CROP PROTECTION. MEDED FAC LANDBOUWWET
RIJKSUNIV GENT 55 (2 PART B). 1990. 583-592.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: AMYLASE, INVERTASE, TREHALASE, PROTEASE, SUBLETHAL
CONCENTRATIONS

Record - 365

DETOXIFICATION MECHANISMS OF DIFLUBENZURON AND TEFLUBENZURON IN THE

LARVAE OF SPODOPTERA LITTORALIS BOISD

EL SAIDY M F; AUDA M; DEGHEELE D

PESTIC BIOCHEM PHYSIOL 35 (3). 1989. 211-222.

Full Journal Title: Pesticide Biochemistry and Physiology

Language: ENGLISH

ABSTRACT

The mechanisms of detoxification of the benzoylphenylureas (BPU), diflubenzuron (DFB), and teflubenzuron (TFB) in the Egyptian cotton leafworm, *Spodoptera littoralis*, were examined, as were rates of penetration, degradation, and inhibition of BPUs hydrolase(s) both in vivo and in vitro. The results were considered in connection with the toxicity of these compounds. Teflubenzuron was 10 times more toxic than diflubenzuron to fourth instar larvae of *S. littoralis*. Profenofos and DEF (S,S,S-tributylphosphorotrithioate) synergized both DFB and TFB, indicating that the major route of detoxification in *S. littoralis* was through hydrolysis. Limited synergism by piperonyl butoxide (PB) indicated that mixed function oxidase enzymes play a relatively small role in BPUs detoxification. TFB was absorbed consistently faster than DFB. Nearly 22% of the topically applied dose of [¹⁴C]TFB was recovered in the larval body after 2 hr, and then decreased to 14% after 24 h compared to only 2 and 5% for DFB. However, DFB was voided in excreta faster than TFB at all time intervals. In *S. littoralis*, DFB was metabolized more rapidly than TFB: based on the relative amount of parent compound present in the larval body, about 58% of extracted radiocarbon was unchanged TFB compared to only 38% DFB. In the excreta, unchanged TFB was excreted more slowly than the metabolites (42% recovered as parent compound), compared to DFB in which 79% of the total extract was present as parent compound. Pretreatment of the fourth instar with sublethal doses of profenofos resulted in a significant decrease in metabolism, more so with DFB than with TFB. A positive correlation was found between in vivo DFB metabolism inhibition and toxicity. In in vitro assays, DFB was hydrolyzed more rapidly than TFB by all tissue extracts. Profenofos was more effective in inhibiting the hydrolysis in vitro of DFB compared to TFB, as indicated by a lower I50 value and steeper slope. Our results indicate that reduced penetration and fast elimination of unchanged [¹⁴C]DFB together with rapid metabolism, which occurs mainly through hydrolysis, are defense mechanisms which contribute to DFB detoxification in *S. littoralis*.

Descriptors/Keywords: EGYPTIAN COTTON LEAFWORM, INSECTICIDE

Record - 366

EFFECT OF ATPLUS-TYPE ADJUVANTS ON DISTRIBUTION AND RETENTION OF DIFLUBENZURON IN LARVAE OF SPODOPTERA LITTORALIS BOISD. LEPIDOPTERA NOCTUIDAE

EL SAIDY M F; AUDA M; DEGHEELE D; VAN OUTRYVE D'YDEWALLE Y

INTERNATIONAL SYMPOSIUM ON CROP PROTECTION, PART 2. MEDED FAC

LANDBOUWWET RIJKSUNIV GENT 53 (2 PART B). 1988. 765-770.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Record - 367

EFFECTS OF ADJUVANTS ON PENETRATION IN AND RESIDUAL ACTIVITY OF MONOCROTOPHOS AND DIFLUBENZURON ON SPODOPTERA LITTORALIS BOISD. LARVAE

EL SAIDY M F; AUDA M; DEGHEELE D

INTERNATIONAL SYMPOSIUM ON CROP PROTECTION, PART B. MEDED FAC

LANDBOUWWET RIJKSUNIV GENT 52 (2 PART B). 1987. 463-470.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: ENHANCED TOXICITY

Record - 368

EFFECT OF DIFLUBENZURON AND DIFLUBENZURON-HOSTATHION COMBINATIONS ON LARVAE AND ADULTS OF THE EGYPTIAN COTTON LEAFWORM SPODOPTERA LITTORALIS LEPIDOPTERA NOCTUIDAE

EL-SAYED E I

BULL ENTOMOL SOC EGYPT ECON SER 0 (12). 1980-1981 (1984) . 195-202.

Full Journal Title: Bulletin of the Entomological Society of Egypt Economic Series

Language: ENGLISH

ABSTRACT

Diflubenzuron (DFB) was found effective against *Spodoptera littoralis* Boisd. The LC value of the fourth instar larvae exposed to DFB for 48 h was six times smaller than that required to produce the same effect after 24 h exposure period. The 3 combinations tested: Exp 5684 Exp 5685 and PH 66 - 17 were potentially and almost equally effective against the larvae. Survivals of DFB treatments of the fourth instar larvae, suffered a decrease in larval weight and reduction in subsequent pupation and adult emergency. Such effects were proportional to the feeding period and concentration used. Continuous feeding of adults on 0.014% DFB caused 59% reduction in hatchability of resulting eggs with no effect on adult longevity.

Descriptors/Keywords: PUPATION, EMERGENCE, HATCHABILITY, LONGEVITY, MORTALITY

Record - 369

IN-VITRO EFFECT OF PROFENOFOS FENVALERATE AND DIMILIN ON PROTEIN AND RNA BIOSYNTHESIS BY RABBIT LIVER AND MUSCLE TISSUES

EL-SEBAE A H; SALEM M H; EL-ASSAR M R S; ENAN E E

J ENVIRON SCI HEALTH PART B PESTIC FOOD CONTAM AGRIC WASTES 23 (5). 1988. 439-452.

Full Journal Title: Journal of Environmental Science and Health Part B Pesticides Food Contaminants and Agricultural Wastes

Language: ENGLISH

ABSTRACT

The present study was carried out to investigate the effect of Curacron (profenofos), Sumicidin (fenvalerate) and Dimilin (difluobenzuron) on the in vitro rate of protein and RNA synthesis by rabbit liver and muscle tissues. The synthesis of protein and RNA were significantly stimulated in the liver and inhibited in the muscle by graded doses of these insecticides. Profenofos showed maximum effect on protein synthesis in both tissues at a dose of 0.2 .mu.g/mL, while the maximum effect on RNA synthesis occurred at 0.2 .mu.g/mL in the liver and at 2 .mu.g/mL in the muscle. Fenvalerate caused maximum stimulation in both liver protein and RNA synthesis at a dose of 2 .mu.g/mL, and maximum inhibition in the muscle at 10 and 0.2 .mu.g/mL for protein and RNA synthesis respectively. The maximum effect of Dimilin on both tissues was reached at 5 .mu.g/mL for protein synthesis and at 0.2 .mu.g/mL for RNA synthesis. The effect of Dimilin on RNA synthesis was more pronounced in both tissues than its effect on protein synthesis, but this trend was reversed in the case of profenofos and fenvalerate. Present data also showed antagonism between these insecticides on the rate of protein and RNA synthesis.

Descriptors/Keywords: ENVIRONMENTAL POLLUTANT, TOXICODYNAMICS, INSECTICIDE

Record - 370

COMPARATIVE TOXICITY OF SIX BENZOYLPHENYL UREAS TO THE LARVAL STAGE OF SPODOPTERA LITTORALIS BOISD

EMAM A K; DEGHEELE D

INTERNATIONAL SYMPOSIUM ON CROP PROTECTION, GENT, BELGIUM, MAY 5, 1992.
MEDED FAC LANDBOUWWET RIJKSUNIV GENT 57 (2-3 PART A-B). 1992. 833-837.
Language: ENGLISH
Document Type: CONFERENCE PAPER

Descriptors/Keywords: DIFLUBENZURON, CHLORFLUAZURON, TRIFLUMURON,
EXAFLUMURON, TEFLUBENZURON, INSECTICIDE, INSECT MORTALITY

Record - 371

TOXICITY OF 3 BENZOYLPHENYLUREAS AGAINST A SUSCEPTIBLE AND
MONOCROTOPHOS-RESISTANT STRAIN OF SPODOPTERA LITTORALIS BOISD

EMAM A K; DEGHEELE D

INTERNATIONAL SYMPOSIUM ON CROP PROTECTION, PART 2. MEDED FAC
LANDBOUWWET RIJKSUNIV GENT 53 (2 PART B). 1988. 745-750.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: COTTON, DIFLUBENZURON, CHLORFLUAZURON, TEFLUBENZURON

Record - 372

DISTRIBUTION OF 4 CARBON-14 BENZOYLPHENYL UREAS IN LAST INSTAR LARVAE OF
SPODOPTERA LITTORALIS BOISD. AND THEIR EXCREMENTS

EMAM A K; DEGHEELE D; VAN OUTRYVE D'YDEWALLE Y

INTERNATIONAL SYMPOSIUM ON CROP PROTECTION, PART 2. MEDED FAC
LANDBOUWWET RIJKSUNIV GENT 53 (2 PART B). 1988. 751-758.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: DIFLUBENZURON, TRIFLUMURON, TEFLUBENZURON,
CHLORFLUAZURON

Record - 373

EFFECT OF SUBLETHAL DOSAGES OF FOUR CHITIN SYNTHESIS INHIBITORS ON THE
REPRODUCTION POTENTIAL AND F-1-GENERATION OF THE EGYPTIAN COTTON LEAFWORM
SPODOPTERA LITTORALIS BOISD. LEPIDOPTERA NOCTUIDAE

EMAM A K; EL-REFAI S A; DEGHEELE D

MEDED FAC LANDBOUWWET RIJKSUNIV GENT 53 (1). 1988. 249-254.

Full Journal Title: Mededelingen van de Faculteit Landbouwwetenschappen Rijksuniversiteit Gent

Language: ENGLISH

ABSTRACT

The fecundity of *Spodoptera littoralis* (Boisd.) adults decreased significantly from 977 \pm 64 eggs in control to 628 \pm 111, 421 \pm 75, 385 \pm 33 and 340 \pm 48 eggs for adults feeding on 10% honey solution containing 1 ppm teflubenzuron, 0.5 ppm chlorflurazuron, 0.5 ppm triflumuron or 20 ppm diflubenzuron, respectively. The respective egg hatch inhibition amounted to 49, 32, 44 and 81%. All differences for fecundity and egg hatch were highly significant. There were no significant differences between adult longevity and benzoylphenyl ureas (BPU's). The subsequent F1-progeny showed 85% larval mortality after previous diflubenzuron treatment of the adults and 64, 44 and 46% pupal mortality after previous teflubenzuron, chlorflurazuron or triflumuron treatment. Chlorflurazuron, triflumuron and diflubenzuron caused considerable prolongation of the larval and pupal life span i.e. from 35.3 days in the control to 36.7, 38.1, 38.0 days in the above treatments, respectively.

Descriptors/Keywords: LARVA, PUPA, TEFLUBENZURON, CHLORFLUAZURON, TRIFLUMURON, DIFLUBENZURON, BENZOYLPHENYLUREA, INSECT GROWTH REGULATOR, MORTALITY

Record - 374

EMMETT, B.J., AND B. M. ARCHER. 1980. THE TOXICITY OF DIFLUBENZURON TO HONEY BEE APIS MELLIFERA L. COLONIES IN APPLE ORCHARDS. (AL) PLANTPATHOLOGY 29 (4) PP 177-183.

Record - 375

ERBENOVA, M. 1982. USE OF DIMILIN 25 DP IN CONTROL OF CATERPILLARS OF SOME BUTTERFLY PEST IN FRUIT TREES. ZAHRADNICTVO. 7 (3) MAR. 1982, PP 108-109.

Record - 376

EFFECTS OF FEEDING DIFLUBENZURON ON REPRODUCTION AND GROWTH OF SHEEP
ESCOBAR E N; MILLER R W; LEFFEL E C

72ND ANNUAL MEETING OF THE AMERICAN SOCIETY OF ANIMAL SCIENCE, ITHACA, N.Y., USA, JULY 27-30, 1980. J ANIM SCI 51 (SUPPL. 1). 1980. 142.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: ABSTRACT, FLY CONTROL, DIET, BLOOD SAMPLE

Record - 377

ESHITA, Y. AND T. KURIHARA. 1977. EFFECTS OF THE INHIBITION OF THE INSECT DEVELOPMENT BY DIMILIN. [PH60-40:1-(4-CHLOROPHENYL)-3-(2,6-DIFLUOROBENZOYL) UREA] ON FOUR SPECIES OF MOSQUITOES. JAP. J. SANIT. ZOOL. 28(3): 333-336. ENG. SUMMARY.

Record - 378

DEVELOPMENT OF AN INTEGRATED APPROACH TO CONTROL OF PINE BEAUTY MOTH IN SCOTLAND UK

EVANS H F; STOAKLEY J T; LEATHER S R; WATT A D

XVIII INTERNATIONAL CONGRESS OF ENTOMOLOGY, VANCOUVER, BRITISH COLUMBIA, CANADA, 1988. FOR ECOL MANAGE 39 (1-4). 1991. 19-28.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: PANOLIS-FLAMMEA, PINUS-SYLVESTRIS, PINUS-CONTORTA, INTEGRATED PEST MANAGEMENT, FENITROTHION, DIMILIN, NUCLEAR POLYHEDROSIS VIRUS, PEST ECOLOGY

Record - 379

AN APPROACH TO CONTROL OF GLOBODERA ROSTOCHIENSIS USING INHIBITORS OF COLLAGEN AND CHITIN SYNTHESIS

EVANS K

NEMATOLOGICA 30 (2). 1984. 247-250.

Full Journal Title: Nematologica

Language: ENGLISH

Descriptors/Keywords: 2,2' BIPYRIDYL 3 AMINOPROPIONITRILE FUMARATE

THIOSEMICARBAZIDE 1 10 PHENANTHROLINE, DIFLUBENZURON, HYDROXY-D-PROLINE,
GROWTH REGULATOR

Record - 380

EVERS, R. 1986. REVIEW OF POTENTIAL HAZARDS OF DIMILIN TO THE VALLEY ELDERBERRY
LONGHORN BEETLE, A CALIFORNIAN SPECIES OF LONGHORN BEETLE. LAB. PROJECT. ID NO.
56635/30/1986. UNPUBLISHED STUDY PREPARED BY DUPHAR B.V. 29 PP.

Record - 381

FAISY, M. A. 1975. EVALUATION OF DIMILIN G-1 FOR CONTROL OF MOSQUITOES. REPORT
THOMPSON-HAYWARD CHEMICAL COMPANY NO. C3742.

Record - 382

EFFECT OF SEQUENTIAL INSECTICIDE TREATMENTS ON THE DIFFERENT
DEVELOPMENTAL STAGES OF CHRYSOPERLA CARNEA STEPHENS IN THE EGYPTIAN COTTON
FIELDS

FARAG A I; BLEIH S B

KULCSAR, P. AND V. EASTOP (ED.). ABSTRACT VOLUME OF THE APHIDOPHAGA 4TH
CONFERENCE; MEETING OF IOBC (INTERNATIONAL ORGANIZATION FOR BIOLOGICAL
CONTROL) WORKING GROUP ECOLOGY OF APHIDOPHAGA; GODOLLO, HUNGARY,
SEPTEMBER 3-7, 1990. 68P. PLANT PROTECTION INSTITUTE OF THE HUNGARIAN
ACADEMY OF SCIENCES: BUDAPEST, HUNGARY. ILLUS. PAPER. ISBN 963-04-0422-2. 0 (0).
1990. 24.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: ABSTRACT, DIFLUBENZURON, TRIFLUMURON, LARVA, EGG, ADULT,
HIGH VOLUME APPLICATION, TOXICITY

Record - 383

FIELD EVALUATION OF THE EFFECTS OF THE JUVENILE HORMONE ANALOGS AND
DIFLUBENZURON DIMILIN ON TERMITES OF THE GENUS MICROCEROTERMES ISOPTERA
TERMITIDAE IN THE CENTRAL REGION OF SAUDI-ARABIA

FARAGALLA A A; BADAWI A I; DABBOUR A I

SOCIOBIOLOGY 11 (1). 1985. 29-38.

Full Journal Title: Sociobiology

Language: ENGLISH

ABSTRACT

When both juvenile hormone analogues (JHA's) (ZR-515 hydroprene and ZR-512 methoprene) were
applied (each at the concentration of 2% emulsion) on toilet paper rolls and left under natural field
conditions for termites of the genus *Microcerotermes* to feed on, a slight increase (from 5.33 to
5.59 soldiers/1000 workers) was induced by hydroprene. Methoprene did not induce any intercaste
production. Diflubenzuron (Dimilin), the chitin inhibitor, applied (at the concentration of 250 ppm) on
another group of the toilet paper rolls induced a slight increase (from 2.42 to 2.98) in the
production of soldiers/1000 workers. This reflected increase might be due to the presence of high
numbers of workers and soldiers recovered from this specific Dimilin-treatment or may be partly due
to the high thermal stability of this compound.

Descriptors/Keywords: HYDROPRENE, SOLDIER PRODUCTION, THERMAL STABILITY

Record - 384

REPRODUCTIVE INHIBITION OF F-1 PROGENY OF SOME STORED GRAIN PESTS
TENEBRIONIDAE BOSTRICHIDAE FED ON GRAINS TREATED WITH THE ANTIMOLTING
INHIBITOR DIMILIN

FARAGALLA A A; IBRAHIM M A; MOSTAFA S A

Z ANGEW ENTOMOL 100 (1). 1985. 57-62.

Full Journal Title: Zeitschrift fuer Angewandte Entomologie

Language: ENGLISH

ABSTRACT

Severe reproductive inhibition reaching > 97% in the F1 progeny of the confused flour beetle *Tribolium confusum* J. d. V., the red flour beetle *T. castaneum* (Hbst.) and the longheaded flour beetle *Latheticus oryzae* Wat. was achieved when fed on Dimilin-treated wheat and millet for 3 wk at concentrations of 7.8 and 15.6 ppm then transferred to mature on untreated grains. The adult emergence of the red flour beetle was completely inhibited when fed on Dimilin-treated wheat and millet at the higher concentration. When fed on Dimilin-treated sorghum at the lower concentration the reproductive inhibition > 88%, > 79% and > 78% were obtained for the 3 spp., respectively. Higher percentages of inhibition > 94%, > 88% and > 77%, respectively, were recovered at the concentration of 15.6 ppm. The F1 progeny of the lesser grain borer *Rhyzopertha dominica* (F.) seems to be relatively less affected by the treatments. With both concentrations, the reproductive inhibition percentages on wheat and millet were 76 and 70 at the lower concentration vs. 82 and 79 at the higher concentration of Dimilin. Very low reproductive inhibition percentages of 14 and 30% were obtained when fed on sorghum treated with Dimilin at 7.8 and 15.6 ppm, respectively.

Descriptors/Keywords: TRIBOLIUM-CONFUSUM, TRIBOLIUM-CASTANEUM,
LATHETICUS-ORYZAE, RHYZOPERTHA-DOMINICA, WHEAT, MILLET, SORGHUM, ADULT
EMERGENCE

Record - 385

HEMOSTERILIZATION OF EUROPEAN CORN BORER OSTRINIA NUBILALIS ADULTS WITH
DIFLUBENZURON

FARAGALLA A A; BERRY E C; LEWIS L C; GUTHRIE W D

J AGRIC ENTOMOL 1 (4). 1984. 371-375.

Full Journal Title: Journal of Agricultural Entomology

Language: ENGLISH

ABSTRACT

Hatchability of egg masses from moth pairs of *O. nubilalis* (Huebner) [a major pest of corn, *Zea mays* (L.)] originating from larvae reared on a meridic diet treated with 7.8 and 15.6 ppm of diflubenzuron was less than was hatchability of egg masses from moths originating from larvae reared on untreated diets. Only 1 sex of a cross originating from larvae reared on treated diet was sufficient to cause loss of hatchability. Rearing larvae on treated diet for only 1 d [day] was as effective in reducing subsequent egg hatch from the resulting adults as was rearing larvae on treated diet for 3, 5, 7, 9, or 11 d.

Descriptors/Keywords: ZEA-MAYS, EGG HATCHABILITY, INSECT GROWTH REGULATOR

Record - 386

OVICIDAL ACTIVITY OF DIFLUBENZURON ON EUROPEAN CORN BORER OSTRINIA NUBILALIS EGG
MASSES

FARAGALLA A A; BERRY E C; GUTHRIE W D

J ECON ENTOMOL 73 (4). 1980. 573-574.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Diffubenzuron caused high mortality of egg masses of *O. nubilalis* (Huebner) when dipped in the chemical at 1, 2, 3 and 4 days after oviposition. Hatchability of egg masses dipped in diffubenzuron for only 1-2 s was low (33.2 vs. 92.8% for the control). Hatchability of egg masses dipped in only 1.95 ppm diffubenzuron was low (28.1 vs. 93.6% for the control); only 6.9% of the eggs hatched when dipped in 500 ppm diffubenzuron.

Descriptors/Keywords: MORTALITY, HATCHABILITY

Record - 387

MONITORING OF SUSCEPTIBILITY TO CYROMAZINE AND DIFLUBENZURON IN HOUSE FLY *MUSCA DOMESTICA* L. POPULATIONS IN HUNGARY

FARKAS R; PAP L

PARASITOL HUNG 24 (0). 1991 (1992). 99-107.

Full Journal Title: Parasitologia Hungarica

Language: ENGLISH

ABSTRACT

The first nationwide survey was carried out to get data on susceptibility to the insect growth regulators cyromazine and diffubenzuron in house fly populations collected on 16 animal farms. As regards cyromazine, the R/S values were 0.95-2.50 at LC50 and 0.61-2.20 at LC95. The indices for diffubenzuron range from 0.20 to 1.53 at LC50 and from 0.35 to 1.40 at LC95. The results indicate that all strains were sensitive to both compounds. Although the flies tested showed moderate to high resistance to several organochlorine, organophosphorous, carbamate and pyrethroid chemicals, a lack of cross-resistance was found between the two larvicides and the conventional insecticides.

Descriptors/Keywords: INSECTICIDE RESISTANCE, INSECT GROWTH REGULATOR, CROSS-RESISTANCE

Record - 388

THE EFFECT OF DIMILIN WP-25 ON IMMATURE STAGES OF LABORATORY-REARED *MUSCA OSIRIS* DIPTERA MUSCIDAE

FARKAS R; SOUNTHONE V

PARASITOL HUNG 18 (0). 1985. 79-84.

Full Journal Title: Parasitologia Hungarica

Language: ENGLISH

ABSTRACT

The effect of 1, 5, 10 and 50 ppm concentrations (calculated for active substance) of Dimilin WP-25 (diffubenzuron) on the eggs, one-, two- and three-days-old larvae, and mature pupae of *Musca osiris* Wiedemann, 1830 was studied in laboratory experiments. Eighty-one to 100% of the eggs failed to reach pupation. Parallel to the increase in exposure time and drug concentration the effect became more pronounced. The majority of the developed pupae were of lighter color and showed deformations; from such pupae normal imagoes failed to emerge. Only 1 to 22% of the larvae of different age died in the Dimilin-containing faeces. At the same time, the mortality of pupae reached 68 to 100%. Older (3-days-old) larvae were less susceptible. The compound was ineffective against the pupae.

Descriptors/Keywords: EGG, LARVAE, PUPAE, DIFLUBENZURON, INSECT GROWTH REGULATOR, SUSCEPTIBILITY, MORTALITY

Record - 389

EFFECTS OF THE INSECT GROWTH REGULATOR DIFLUBENZURON ON NONTARGET AQUATIC POPULATION IN A LOUISIANA INTERMEDIATE MARSH

FARLOW J E; BREAUD T P; STEELMAN C D; SCHILLING P E

ENVIRON ENTOMOL 7 (2). 1978 199-204.

Full Journal Title: Environmental Entomology

Language: ENGLISH

ABSTRACT

A study was conducted in a Louisiana [USA] coastal marsh to determine the ecological impact of the insect growth regulator diflubenzuron on populations of non-target aquatic organisms. Six applications of diflubenzuron (28 mg AI[active ingredient]/ha) [used for controlling mosquitoes] over an 18 mo. period caused statistically significant differences in the population density of aquatic organisms when treated and untreated populations were compared. Populations of 5 taxa [nymphs of *Trichocorixa louisianae* Jaczewski and *Buenoa* spp., *Coenagrionidae* naiad species, *Berosus infuscatus* LeConte adults and *Hyalella azteca* (Saussure)] were significantly ($P < 0.01$) reduced while populations of 15 taxa (*Physa* sp., *Caenis* sp. and *Callibaetis* sp. naiads, *Noteridae* larvae, *Hydrovatus cuspidatus* Kunze adults, *Hydrovatus* sp. larvae, *Dytiscidae* (tribe *Bidessini*) larvae, *Mesovelina mulsanti* Jaczewski adults, *Trichocorixa louisianae* adults, larvae of *Chironomidae*, *Ephdridae*, *Dolichopodidae* and *Tabanidae*, and the fishes *Gambusia affinis* (Baird and Girard) and *Jordanella floridae* (Goode and Bean) showed significant ($P < 0.05$) increases after exposure to diflubenzuron. The analysis of data on the 27 remaining taxa collected indicated no statistically significant ($P > 0.05$) difference when the treated and untreated populations were compared.

Descriptors/Keywords: USA, TRICHOCORIXA-LOUISIANAE, BUENOA-SPP, MESOVELIA-MULSANTI, BEROSUS-INFUSCATUS, HYDROVATUS-CUSPIDATUS, HYDROVATUS-SP, PHYSY-SP, CAENIS-SP, CALLIBAETIS-SP, GAMBUSIA-AFFINIS, JORDANELLA-FLORIDAE, HYALELLA-AZTECA, COENAGRIONIDAE, NOTERIDAE, CHIRONOMIDAE, EPHYDRIDAE, DOLICHOPODIDAE, TABANIDAE, DYTISCIDAE, MOSQUITO CONTROL

Record - 390

FARLOW, J E. 1976. ECOLOGICAL IMPACT OF DIMILIN ON THE AQUATIC FAUNA (SIC) OF A LOUISIANA COASTAL MARSH. DOCTORIAL DISSERTATION, LOUISIANA STATE UNIV. AND AG. AND MECH. COLLEGE, DEPT. OF ENT. (UNPUBLISHED STUDY RECEIVED DEC. 23, 1976 UNDER 148-1258; SUBMITTED BY THOMPSON HAYWARD CHEMICAL CO. KANSAS CITY, KS.

Record - 391

EFFECT OF DIMILIN ON CAROTENE PRODUCTION IN BLAKESLEA TRISPORA

FEOFILOVA E P; USHANOVA A E; IVANOVA G V

MICROBIOLOGY (ENGL TRANSL MIKROBIOLOGIYA) 51 (2). 1982. 222-225.

Full Journal Title: MICROBIOLOGY (English Translation of Mikrobiologiya)

Language: ENGLISH

Descriptors/Keywords: ASPERGILLUS-NIGER, CUNNINGHAMELLA-JAPONICA, CHITIN SYNTHESIS, INSECTICIDE, GROWTH INHIBITION

Record - 392

FERGUSON, A. J. AND J. B. WALLER. 1982. A LABORATORY EVALUATION OF PIRIMIPHOS METHYL AND DIFLURON ADMIXED WITH WHEAT AGAINST THE GRANARY WEEVIL (SITOPHILUS GRANARIUS). NEW ZEALAND J. OF AG. RESEARCH. 25(1):113-117.

Record - 393

EFFECTS OF THE CHITIN SYNTHESIS INHIBITOR DIFLUBENZURON ON DEVELOPMENT OF ASCARIS SUUM AND HAEMONCHUS CONTORTUS

FETTERER R H; URBAN J F JR; MILLER R W

VET PARASITOL 32 (2-3). 1989. 181-192.

Full Journal Title: Veterinary Parasitology

Language: ENGLISH

ABSTRACT

The potential of the chitin synthesis inhibitor diflubenzuron (DFB) to alter the development of the parasitic nematodes (*Ascaris suum* and *Haemonchus contortus*) was investigated. DFB given orally (10 mg kg⁻¹ per day for 30 days) to sheep inoculated with *H. contortus* infective larvae did not prevent the establishment of adults or affect fecal egg output. However, there was a significant (> 90%) decrease in the number of infective larvae recovered from fecal cultures derived from lambs harboring *H. contortus* adults that were treated with DFB. DFB did not affect egg hatching. Oral administration (10 mg kg⁻¹ per day for 20 days) of DFB to swine harboring adult *A. suum* adults had no effect on the adult worm burden or on egg morphology, but eggs removed from worms obtained from DFB-treated swine contained less chitin than eggs removed from untreated control swine. DFB also inhibited chitin synthesis in vitro in the isolated reproductive tract of *A. suum* adults. These results indicate that DFB at high doses can inhibit the subsequent development of *H. contortus* larvae in the feces. Since *H. contortus* larvae lack chitin, DFB may act on these larvae by a mechanism independent of a direct effect on chitin synthesis.

Descriptors/Keywords: SWINE, ANTIHELMINTHIC-DRUG, ENZYME INHIBITOR-DRUG, EGG MORPHOLOGY, FECAL, LARVAE

Record - 394

SUSTAINED-RELEASE BOLUS FOR HORN FLY DIPTERA MUSCIDAE CONTROL EFFECTS OF METHOPRENE AND DIFLUBENZURON ON SOME NONTARGET SPECIES

FINCHER G T

ENVIRON ENTOMOL 20 (1). 1991. 77-82.

Full Journal Title: Environmental Entomology

Language: ENGLISH

ABSTRACT

Dung from cattle treated with sustained-release boluses containing either methoprene or diflubenzuron was bioassayed biweekly for 27 wk with the horn fly, *Haematobia irritans* (L); two species of dung-burying beetles, *Onthophagus gazella* (F.) and *Sisyphus rubrus* Paschalidis; and two species of dung-inhabiting predators, *Philonthus flavolimbatus* Erichson and *P. longicornis* Clark. When reared on dung from a steer treated with the methoprene bolus, emergence of adult horn flies was reduced 37.5-99.4% during the first 24 wk and 8.3% at 27 wk when compared with emergence of horn flies reared on untreated dung. Adult horn fly emergence, when reared on dung from a steer that received the diflubenzuron bolus treatment, was reduced 82.9-100% over a 21-wk period, but there was no reduction at 27 wk. Emergence of adult *O. gazella* and *S. rubrus* from brood balls made with dung from a steer treated with a diflubenzuron bolus was reduced for 7 wk after treatment. Dung from the methoprene-treated animal had no apparent effect on the reproduction of either dung beetle species. There was no apparent effect on *P. flavolimbatus* and *P. longicornis* when reared on dung from steers treated with either methoprene or diflubenzuron.

Descriptors/Keywords: HAEMATOBIA-IRRITANS, ONTHOPHAGUS-GAZELLA, SISYPHUS-RUBRUS, PHILONTHUS-FLAVOLIMBATUS, PHILONTHUS-LONGICORNIS, CATTLE REPRODUCTIVE EFFECT, INSECT, MAMMAL, PEST CONTROL, INSECTICIDE

Record - 395

FINK, R. 1973. FINAL REPORT: EIGHT-DAY DIETARY LC50-BOBWHITE QUAIL: PROJECT NO. 553-117. UNPUBLISHED STUDY RECEIVED APR. 7, 1976 UNDER 148-1259; PREPARED BY ENVIRONMENTAL SCIENCES CORP., SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 396

FINK, R. AND S. R. PETROCELLI. 1973. FINAL REPORT: EIGHT-DAY DIETARY LC50-MALLARD DUCKS: PROJECT NO. 553-118. UNPUBLISHED STUDY RECEIVED FEB. 10, 1976 UNDER 6G1744; PREPARED BY ENVIRONMENTAL SCIENCES CORP. SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 397

ENVIRONMENTAL CONCENTRATIONS AND AQUATIC TOXICITY DATA ON DIFLUBENZURON
DIMILIN

FISCHER S A; HALL L W JR

CRIT REV TOXICOL 22 (1). 1992. 45-79.

Full Journal Title: Critical Reviews in Toxicology

Language: ENGLISH

ABSTRACT

The insecticide diflubenzuron (DFB) is commonly used in various mid-Atlantic states for suppression of gypsy moths in hardwood forests. DFB is potentially toxic to nontarget biota because it can enter aquatic systems through aerial application or runoff after precipitation events. Based on this concern, the objectives of this study were to: (1) compile, review, and synthesize literature on the fate, persistence, and environmental concentrations of DFB in both freshwater and saltwater environments; (2) compile, review, and synthesize acute and chronic aquatic toxicity data on DFB effects on freshwater and saltwater organisms; (3) assess possible risk to aquatic biota associated with the use of this insecticide in one specific area (Maryland); and (4) recommend future research based on the data gaps identified from this study. DFB has low solubility in water and exists as a technical grade (TG) and wettable powder (WP) formulation. The toxicity of both formulations is similar at concentrations $< 10 \text{ } \mu\text{g/l}$. Organic matter is a major factor influencing the adsorption and degradation of DFB in freshwater, saltwater, and sediment. The half-life of this insecticide in freshwater is approximately 3 days at a pH of 10 and temperature of 36 degree C. At lower pH conditions of 6 and at the same temperature, DFB is more persistent since half-life values of approximately 9 days have been reported. The half-life of DFB in soil is < 14 days when the particle size was approximately $2 \text{ } \mu\text{m}$. The half-life is generally vegetation acts as a sink for DFB by gradually adsorbing the chemical and releasing it over a period of time. Freshwater organisms demonstrated a wide range of sensitivity to DFB. Sensitivity was dependent on body composition (i.e., exo- vs. endoskeleton), trophic level, and life stage. During acute exposures, aquatic invertebrates were more than 25,000 times as sensitive to DFB than fishes. The most acutely sensitive species tested was the Amphipod, *Hyalalella azteca* (96-h LC50 = $1.84 \text{ } \mu\text{g/l}$). A mature Plecopteran, *Skwala* sp., was the most resistant invertebrate species tested in acute tests (96-h LC50 $> 100,000 \text{ } \mu\text{g/l}$). In chronic tests, DFB concentrations of $1 \text{ } \mu\text{g/l}$ or greater were reported to eliminate populations of various Plecopteran (stoneflies) and Ephemeropteran (mayflies) species after 1 month of exposure. A 30-day LC50 of $0.1 \text{ } \mu\text{g/l}$ DFB was also reported for the Tricopteran, *Clistorinia magnifica*. Freshwater fish were resistant to acute exposures of DFB as 96-h LC50s were generally $> 50,000 \text{ } \mu\text{g/l}$. Fish were also reported to accumulate DFB rapidly during acute exposures but were capable of eliminating this insecticide within 7 days. Most of the DFB aquatic toxicity studies with saltwater organisms were conducted with invertebrates. The most acutely sensitive species tested was the premolt state of grass shrimp (96-h LC50 = $1.11 \text{ } \mu\text{g/l}$). The mummichog, *Fundulus heteroclitus*, the most resistant species tested, had a 96-h LC50 of 32.99 mg/l . The lowest reported chronic effect concentration for saltwater organisms exposed to DFB was $0.075 \text{ } \mu\text{g/l}$. This concentration was reported to significantly reduced reproduction in the mysid shrimp, *Mysidopsis bahia*. Data from the State of Maryland were used as an example for predicting the potential environmental effects of DFB on aquatic biota in Maryland waters. A case can be made for possible environmental effects given the worst case conditions of the most sensitive species (pre-molt stage of grass shrimp with a 96-h LC50 of $1.11 \text{ } \mu\text{g/l}$) exposed to the highest reported environmental concentration ($1.5 \text{ } \mu\text{g/l}$ DFB in water). However, in most cases, the present data base would suggest that

environmental effects are not likely.

Descriptors/Keywords: HYALELLA-AZTECA, CLISTORONIA-MAGNIFICA, FUNDULUS-HETEROCLITUS, MYSIDOPSIS-BAHIA, INSECTICIDE, MARYLAND

Record - 398

THE CELL WALL OF *FOMES ANNOSUS* *HETEROBASIDION ANNOSUM* AS A TARGET FOR BIOCHEMICAL CONTROL 2. THE INFLUENCE OF INHIBITORS OF CELL WALL SYNTHESIS

FLEMMING S; CWIELONG P; HUETTERMANN A

EUR J FOR PATHOL 12 (4-5). 1982. 273-280.

Full Journal Title: European Journal of Forest Pathology

Language: ENGLISH

ABSTRACT

Polyoxin-D inhibits at very low concentrations (20 μ M) the activity of chitin-synthetase of *F. annosus*. The mechanism of this inhibition was determined as being competitive inhibition. The inhibitor competes with the natural substrate (uridinediphospho-N-acetyl-glucosamine) for the substrate binding site of the enzyme. The ratio between the inhibitor constant K_i and the Michaelis constant K_m of the natural substrate is about 100. This value is a very good basis for long term control of the fungus in vivo. The addition of the technical grade Polyoxin-mixture to the culture medium of *F. annosus* resulted into inhibition of growth at the same low concentrations of the drug. Compared to the toxic effects of phenols on the fungus (Haars et al.), Polyoxins are 100 times more efficient. The inhibition, however, is reversible. no killing of the fungus was observed at concentrations resulting into complete inhibition of growth. The addition of L-threonine to the culture medium had no synergistic effect on the Polyoxin action. The insecticide Dimilin which has been reported to inhibit chitin synthesis in insects (Deul et al. 1978) did not have any inhibitory effect on chitin synthetase of *F. annosus* in vitro or on growth of the fungus in vivo.

Descriptors/Keywords: CHITIN SYNTHETASE, DIMILIN, INSECTICIDE, UDP-N ACETYL GLUCOSAMINE PHENOL, TOXICITY, L THREONINE, GROWTH

Record - 399

EFFICACY OF TWO FEEDTHROUGH LARVICIDES IN COMPARISON WITH TWO INSECTICIDE IMPREGNATED EAR TAGS FOR CONTROL OF TWO COMMON FLY PESTS OF DAIRY CATTLE

FLETCHER M G; ROBERTS J E; TURNER E C JR

VA J SCI 40 (4). 1989. 206-211.

Full Journal Title: Virginia Journal of Science

Language: ENGLISH

ABSTRACT

Diflubenzuron and stirofos feedthrough larvicides were compared with two formulations of insecticide impregnated ear tags for control of horn fly, face fly and stable fly when applied to non-lactating dairy cattle in southwestern Virginia. Five herds each received one of the four treatments plus a control herd. The results indicate that both the feedthrough larvicides significantly reduced the number of horn flies, while neither were as effective at controlling the face fly or stable fly. Neither of the feedthrough treatments were as effective as the eartags for control of the horn fly or face fly. Data from a bioassay of manure collected in the two herds on the feedthrough ration and the control herd showed a significant reduction in the number of house fly larvae emerging from the treated manure.

Descriptors/Keywords: DIFLUBENZURON, STIROFOS

Record - 400

LABORATORY TESTS OF DIFLUBENZURON AND 4 ANALOGS AGAINST THE PINK BOLL WORM AND A FIELD CAGE TEST WITH DEFLUBENZURON AND EL-494 N-5-4 BROMOPHENYL-6-METHYL-2-PYRAZINYLAMINOCARBONYL-2 6-DICHLORO BENZAMIDE FOR CONTROL OF THE PINK BOLL WORM AND COTTON LEAF PERFOATOR

FLINT H M; SMITH R L; NOBLE J M; SHAW D; DEMILO A B; KHALIL F

J ECON ENTOMOL 71 (4). 1978 616-619.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

In laboratory tests, diflubenzuron (N-[[[4-chlorophenyl]amino] carbonyl]-2,6-difluorobenzamide) (AI3-29054), EL-494 (N-[[[5-(4-bromophenyl)-6-methyl-2-pyrazinyl]amino]carbonyl]-2,6-dichlorobenzamide), EL-588 (2,6-dichloro-N-[[[5-(4-chlorophenyl)-2-pyrazinyl]amino]carbonyl]benzamide), AI3-63220 (N-[[[4-bromophenyl]amino]carbonyl]-2,6-difluorobenzamide and AI 3-63223 (2,6-difluoro-N-[[[4-(trifluoromethyl)phenyl]amino]carbonyl]benzamide) prevented development of adult pink bollworms, *Pectinophora gossypiella* (Saunders) when they were fed in larval diet at 1-10 ppm. Contact experiments with adult moths indicated little activity up to 18 mg/cm² except for AI3-3220 and AI3-63223 which caused significant mortality after a 1 wk exposure to treated cage surfaces. Diflubenzuron and EL-494 were tested for systemic activity by treating foliage of cotton plants at rates up to 15.2 mg/plant without effect on subsequent development of the pink bollworm. A further test in field cages using the 2 compounds at a rate of 0.11 kg/ha indicated that diflubenzuron was superior to EL-494 for control of the cotton leafperforator, *Bucculatrix thurberiella* Busck, but neither compound had any activity against the pink bollworm.

Descriptors/Keywords: PECTINOPHORA-GOSSYPIELLA, BUCCULATRIX-THURBERIELLA, COTTON PESTS, N-4 CHLOROPHENYLAMINOCARBONYL-2 6-DIFLUORO BENZAMIDE, EL-494 N-5-4 BROMOPHENYL-6-METHYL-2-PYRAZINYLAMINOCARBONYL-2 6-DICHLORO BENZAMIDE, EL-588 2 6 DI CHLORO-N-5-4-CHLOROPHENYL-2 PYRAZINYLAMINOCARBONYL BENZAMIDE, AI-3-63220 N-4 BROMOPHENYLAMINOCARBONYL-2 6-DIFLUORO BENZAMIDE, AI-3-63223 2 6 DI FLUORO-N-4-TRIFLUOROMETHYLPHENYLAMINOCARBONYL BENZAMIDE

Record - 401

FLINT, H. M., R. L. SMITH, D. FOREY, AND B. HORN. 1977. DIFLUBENZURON: EVALUATION FOR CONTROL OF THE PINK BOLL WORM, PECTINOPHORA GOSSYPIELLA, CABBAGE LOOPER, TRICHOPLUSIA NI, AND COTTON LEAF PERFORATOR, BUCCULATRIX THURBERIELLA, IN A FIELD CAGE TEST (COTTON). J. ECON. ENTOMOL. 70(2):237-239.

Record - 402

TOXICITY AND PERSISTENCE OF HEXAFLUMURON TO THE VELVETBEAN CATERPILLAR ANTICARSIA GEMMATALIS HUEBNER 1818 LEPIDOPTERA NOCTUIDAE IN SOYBEANS

FOERSTER L

AN SOC ENTOMOL BRAS 21 (3). 1992. 391-400.

Full Journal Title: Anais da Sociedade Entomologica do Brasil

Language: ENGLISH

ABSTRACT

Field experiments were conducted in Parana State, Brazil during three soybean seasons to evaluate the efficiency of the insect growth regulator hexaflumuron against large (> 1.5 cm) larvae of *A. gemmatalis*. Dosages of 5g, 10g, 20 g and 40g a.i./ha were compared to similar dosages of diflubenzuron and to dosages ranging from 45g to 180g a.i./ha of chlorpyrifos. At 5g and 10g a.i./ha hexaflumuron was not effective; at 20g and 40g a.i./ha its efficiency varied according to climatic conditions; prolonged drought and high temperature impaired its action either by degradation and/or by volatilization, whereas under milder conditions of temperature and humidity its efficiency was significantly increased.

Similar variation in efficiency was recorded for chlorpyrifos. Diflubenzuron was not affected by climatic conditions and was at least twice as toxic as hexaflumuron. At 10g a.i./ha diflubenzuron provided control rates similar to the ones obtained with hexaflumuron at 20g a.i./ha. Under unfavourable weather conditions for hexaflumuron and chlorpyrifos, the dosage of 5g a.i./ha of diflubenzuron was more effective and showed longer effect than either chlorpyrifos at 180g or hexaflumuron at 40g a.i./ha. Treatments applied the beginning of larval attack were more efficient than similar treatments made close to the peak of larval incidence, resulting in this case in a proportionality higher number of survivors. Mixtures between chlorpyrifos and either growth inhibitor did not improve the efficiency of the treatments in comparison to the products alone.

Descriptors/Keywords: SOYBEAN, INSECT GROWTH REGULATOR, LARVA, CLIMATE, BRAZIL

Record - 403

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS. 1985. PESTICIDE RESIDUES IN FOOD., REPORT OF THE JOINT MEETING OF FAO PANEL OF EXPERTS ON PESTICIDE RESIDUES IN FOOD AND THE ENVIRONMENT AND A WHO EXPERT GROUP ON PESTICIDE RESIDUES, GENEVA, 23 SEPT. - OCT. 1985.

Record - 404

FOOD AND DRUG ADMINISTRATION. 1985. PESTICIDE ANALYTICAL MANUAL, VOL. 11: DIFLUBENZURON: METHOD II (1976), AVAILABLE FROM THE NATIONAL TECHNICAL INFORMATION SERVICE, 10 PP.

Record - 405

SUBLETHAL EFFECTS OF INSECT GROWTH REGULATORS UPON CRAB LARVAL BEHAVIOR

FORWARD R B JR; COSTLOW J D JR

WATER AIR SOIL POLLUT 9 (2). 1978 227-238.

Full Journal Title: Water Air and Soil Pollution

Language: ENGLISH

ABSTRACT

Both swimming speeds and phototaxis by the 4 larval stages of the crab *Rhithropanopeus harrisi* were monitored on chronic exposure to sublethal concentrations of the insect growth regulators methoprene (Altosid: ZR-515), hydroprene (Altozar: ZR-512) and dimilin (TH-6040). Larvae were reared under conditions of salinity (20.ppermil.) and temperature (25.degree. C) which produce the greatest developmental success. Sublethal concentrations of methoprene had no effect on swimming rates or phototaxis as compared to the acetone control larvae. For hydroprene, swimming rates by Stage I, II and III zoeae were unaffected while a significant increase in swimming speeds occurred in Stage IV zoeae exposed to concentrations of 0.05 and 0.1 ppm. Only Stage III zoeae exposed to 0.1 ppm showed a significant decrease in the level of positive phototaxis. Dimilin was much more potent, as significant increases in swimming speeds occurred in Stage I, II and III zoeae, with 0.3 ppb being the lowest effective concentration. Although swimming by Stage IV zoeae was unaffected, phototaxis was altered at concentrations as low as 0.1 ppb. Concentrations, which alter behavior, are related to levels which are reported to control mosquito larvae.

Descriptors/Keywords: RHITHROPANOPEUS-HARRISII, METHOPRENE, HYDROPRENE, DIMILIN, SWIMMING SPEEDS, PHOTO TAXIS

Record - 406

PEAR PYRUS COMMUNIS L. BARTLETT CODLING MOTH CM CYDIA POMONELLA L. PEAR PSYLLA PP PSYLLA PYRICOLA FOERSTER TWOSPOTTED SPIDER MITE TSSM

TETRANYCHUS URTICAE KOCH CODLING MOTH AND PEAR PSYLLA CONTROL 1990

FOUCHE C F; VAN STEENWYK R A; ELKINS R B

THOMAS, J. H. (ED.). INSECTICIDE AND ACARICIDE TESTS, VOL. 16. 327P.

ENTOMOLOGICAL SOCIETY OF AMERICA: LANHAM, MARYLAND, USA. ILLUS. PAPER. 0 (0). 1991. 29.

Language: ENGLISH

Descriptors/Keywords: DIMILIN, FENOXYCARB, GUTHION, NTN-33893

Record - 407

METABOLIC FATE OF DIFLUBENZURON IN TWO-SPOTTED SPIDER MITES

TETRANYCHUS URTICAE

FRANKLIN E J; KNOWLES C O

ANNUAL MEETING OF THE MISSOURI ACADEMY OF SCIENCE, KIRKVILLE, MO., USA, APRIL 25-26, 1980. TRANS MO ACAD SCI 14 (0). 1980. 175.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: ABSTRACT, RADIOACTIVE TECHNIQUE

Record - 408

TRANSLOCATION AND FATE OF DIFLUBENZURON IN BEAN PLANTS

FRANKLIN E J; KNOWLES C O

ANNUAL MEETING OF THE MISSOURI ACADEMY OF SCIENCE, KIRKVILLE, MO., USA, APRIL 25-26, 1980. TRANS MO ACAD SCI 14 (0). 1980. 174.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: ABSTRACT, INSECTICIDE, CARBON-14 LABEL, 4 CHLORO-3-HYDROXY, DIFLUBENZURON, METABOLITES

Record - 409

FRASER, W. D. AND I. B. PELL. 1977. THE ACUTE TOXICITY OF DU 112307 (DIMILIN 25% WP) TO THE COMMON CARP (CYPRINUS CARPIO) AND THE RAINBOW TROUT (SALMO GAIIRDNERI). REPORT NO. 55645/1/77., UNPUBLISHED STUDY RECEIVED JUL. 31 1978 UNDER 148-1259, PREPARED BY HUNTINGTON RESEARCH CENTRE, ENGLAND, SUBMITTED BY THOMPSON HAYWARD CHEMICAL CO. KANSAS CITY, KS.

Record - 410

FREITAG, D., J. P. LAY, AND F. KORTE. 1984. ENVIRONMENTAL HAZARD PROFILE TEST RESULTS AS RELATED TO STRUCTURES AND TRANSLATION INTO THE ENVIRONMENT. IN QSAR IN ENVIRONMENTAL TOXICITY, ED. KLE. KAISER 111-136.

Record - 411

FREITAG, D., I. SCHEUNERT, AND W. KLEIN. 1984. LONG-TERM FATE OF 4-CHLOROANILINE-14C IN SOIL AND PLANTS UNDER OUTDOOR CONDITIONS. A CONTRIBUTION TO TERRESTRIAL ECOTOXICOLOGY OF CHEMICALS. JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY 32(2):203-207.

Record - 412

FRETZ, T. A., 1973. HERBICIDE IMPREGNATED MULCHES FOR WEED CONTROL IN CONTAINER NURSERY STOCK. SCIENTIA HORTICULTURAE 1:165-170.

Record - 413

CHITIN SYNTHESIS AND SHEATH MORPHOGENESIS IN BRUGIA MALAYI MICROFILARIAE

FUHRMAN J A; PIESSENS W F

MOL BIOCHEM PARASITOL 17 (1). 1985. 93-104.

Full Journal Title: Molecular and Biochemical Parasitology

Language: ENGLISH

ABSTRACT

Brugia malayi microfilariae and gravid adult females were examined to determine whether chitin (poly-.beta.(1-4)-linked N-acetylglucosamine) is a structural component of the microfilarial sheath. Two lectins which are specific for .beta.(1-4)-linked oligomers of N-acetylglucosamine bind to the sheaths of living microfilariae. Diflubenzuron, a potent inhibitor of chitin synthesis in insects and crustaceans, causes gravid female worms to shed progeny microfilariae with truncated sheaths. A chitin-like fraction (hot alkali-insoluble and chitinase-sensitive) can be isolated from gravid female (but not male) worms. This fraction can be metabolically labelled with radioactive glucosamine, but such labelling is inhibited by diflubenzuron. These data suggest that chitin synthesis is critical to microfilarial sheath morphogenesis in this parasitic nematode.

Descriptors/Keywords: DIFLUBENZURON, CHITIN SYNTHESIS INHIBITOR, N ACETYLGLUCOSAMINE

Record - 414

FULTZ, T. O. 1975. AERIAL APPLICATION OF DIMILIN FOR SALT MARSH MOSQUITO CONTROL IN GEORGIA. REPORT THOMPSON HAYWARD CHEMICAL CO.

Record - 415

SOYBEAN GLYCINE MAX L. MERR. BRAXTON VELVETBEAN CATERPILLAR VBC ANTICARSIA GEMMATALIS HUBNER VELVETBEAN CATERPILLAR VBC CONTROL IN SOYBEAN 1989

FUNDERBURK J; MARUNIAK J; BOUCLAS D

THOMAS, J. H. (ED.). INSECTICIDE AND ACARICIDE TESTS, VOL. 16. 327P.

ENTOMOLOGICAL SOCIETY OF AMERICA: LANHAM, MARYLAND, USA. ILLUS. PAPER. 0

(0). 1991. 217.

Language: ENGLISH

Descriptors/Keywords: DIMILIN, AMBUSH, ASANA, AGNPV, LARVIN, DIPEL, LANNATE

Record - 416

FOOD UTILIZATION RATE OF LARVAL GROWTH AND FECUNDITY OF BOMBYX MORI LEPIDOPTERA BOMBYCIDAE FED MULBERRY LEAVES TREATED WITH METHOPRENE TRIPRENE AND DIFLUBENZURON

GAABOUB I A; EL-HELALY M S; MOSTAFA S M

J ECON ENTOMOL 78 (6). 1985. 1182-1186.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

When *Bombyx mori* L. were fed the insect growth regulators (IGR's) methoprene, triprene, or diflubenzuron on mulberry leaves, their conversion of food as estimated to coefficient of food utilization values (CFU's) varied widely from one larval stage to another; within a given larval stage, the CFU's varied with the IGR concentration tested. Fourth instars had 4.6 to 12.1%, 2.4 to 8.1%, and 3.4 to 8.3% higher CFU's than control larvae when they were tested with concentrations of 0.001 to 10 μ g/ml of methoprene, triprene, and diflubenzuron, respectively. In the case of fifth instar, trends in CFU's were not consistent. The digestibility pattern appeared to change with the larval stage and treatment. There seems to be a relationship between the concentration or type of IGR tested and fecundity of females, since hanging the IGR or its concentration caused significant increases or decreases of the mean number of eggs produced per female. Therefore, if races were differentially effected, some survivors of treatments with some IGR's might produce significantly more progeny.

Descriptors/Keywords: INSECT GROWTH REGULATOR, FEEDING BEHAVIOR

Record - 417

DELAYED EFFECTS AND THE BASAL FOLLICLE NUMBERS DEVELOPED BY FEMALES OF *CULEX PIPIENS* EMERGED FROM TREATMENTS OF LARVAE WITH PARTIALLY LETHAL CONCENTRATIONS OF ALTOSID AND DIMILIN

GAABOUD I A; RAWASH I A; EL-GAYAR F H; TRABOULSI A F

TOXICOLOGY 19 (3). 1981. 269-274.

Full Journal Title: Toxicology

Language: ENGLISH

ABSTRACT

The possible juvenilizing effects of Dimilin and Altosid against larvae of *C. pipiens* L. were studied. Apart from delayed lethal action, possible effect on the mean number of basal follicles developed per female was considered. A baseline exposure was found which caused only low mortalities of the early 4th larval instar. Results showed a correlation between the overall deaths during development and the sex ratio. Higher mortality increases the proportion of females. Treatments with 0.00001, 0.0001 and 0.001 ppm Dimilin caused 9.6%, 33.6% and 18.6% increase in the mean basal follicle numbers developed per female, respectively. In the case of Altosid, these levels of increase were 23.1, 26.5 and 23.8%, respectively, after treatments with the same concentrations.

Descriptors/Keywords: JUVENILIZE, MORTALITY, SEX RATIO

Record - 418

GAGE, S. A., G. C. JACKSON, AND D. C. VAILE. 1976. EVALUATION OF THE ANTIFOULINGS POTENTIAL OF AN INSECTICIDE SUPPLIED BY PHILLIPS-DUPHAR B.V. REPORT CENTRAL DOCKYARD LABORATORY, PORTSMOUTH, ENGLAND.

Record - 419

PRELIMINARY COMPARISON OF SPIKE DEVELOPMENT STAGES FOR INSECTICIDE APPLICATION AGAINST *HELIOCHEILUS ALBIPUNCTELLA* DE JOANNIS IN PEARL MILLET

GAHUKAR R T

INSECT SCI APPL 11 (2). 1990. 205-208.

Full Journal Title: Insect Science and its Application

Language: ENGLISH

ABSTRACT

Spraying of diflubenzuron at 100 g a.i./ha after spike emergence (10-15 cm from flag leaf) was more effective against early larval stages of millet spike worm, *Heliocheilus* (= *Raghuva*) *albipunctella* De Joannis, than spraying the crop at female flowering or at the milkly grain stage.

Descriptors/Keywords: FLOWERING, DIFLUBENZURON

Record - 420

GANDHALE, D. N., A. S. PATIL, AND A. R. MALI. 1983. EFFECT OF DIFLUBENZURON AND SIR 8514 ON HELIOTHIS ARMIGERA HUB. (BOLL WORM). THE MADRAS AG. JOURNAL 70(3):203-204.

Record - 421

GANYARD, M. C. 1986. DISSIPATION OF DIFLUBENZURON RESIDUES IN A FORET ECOSYSTEM FOLLOWING SIMULATED APPLICATION FOR GYPSY MOTH CONTROL. REPORT DUPHAR B.V. NO. 56637/46/1986.

Record - 422

WIDE AREA FIELD TEST OF DIFLUBENZURON FOR CONTROL OF AN INDIGENOUS BOLL WEEVIL POPULATION

GANYARD M C; BRADLEY J R JR; BRAZZEL J R

J ECON ENTOMOL 71 (5). 1978 785-788.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Diflubenzuron [Dimilin; 1-(4 chlorophenyl)-3(2, 6-difluorobenzoyl)-urea], was applied 9-10 times at 0.14 kg AI[active ingredient]/ha to all 76 cotton fields in an isolated cotton production area for control of an indigenous low to moderate population of *Anthonomus grandis grandis* Boheman. Boll weevil population dynamics were recorded in the diflubenzuron treated fields and in a conventionally treated check area. Results indicated > 90% control of reproduction. The F3 boll weevil population in the diflubenzuron treated area was no higher than the initial overwintered population, but the population increased 12X where conventional chemicals were used.

Descriptors/Keywords: ANTHONOMUS-GRANDIS-GRANDIS, COTTON FIELDS, INSECT GROWTH REGULATOR, OVER WINTERED POPULATION

Record - 423

GANYARD, M. C., J. R. BRADLEY JR, F. J. BOYD, AND J. R. BRAZZEL. 1977. FIELD EVALUATION OF DIFLUBENZURON (DIMILIN) FOR CONTROL OF BOLL WEEVIL ANTHONOMUS GRANDIS REPRODUCTION (COTTON PESTS). J. ECON. ENTOMOL. 70(3):347-350.

Record - 424

EVALUATION OF THE EFFECTS OF 6 SELECTED PESTICIDES ON THE GROWTH OF NOMURAEA RILEYI AND BEAUVERIA BASSIANA IN BROTH CULTURES

GARDNER W A; SUTTON R M; NOBLET R

J GA ENTOMOL SOC 14 (2). 1979. 106-113.

Full Journal Title: Journal of the Georgia Entomological Society

Language: ENGLISH

ABSTRACT

[Careful evaluation of pesticides and entomogenous fungi is essential for their use in integrated control programs.] The effects of increasing concentrations of benomyl, maneb, methyl parathion, carbaryl, methomyl and diflubenzuron on the growth of *N. rileyi* (Farlow) Samson and *B. bassiana* (Bals.) Vuill. were evaluated in broth cultures. Benomyl, maneb and methyl parathion completely inhibited *N. rileyi* at all concentrations tested. Methomyl and carbaryl also completely inhibited *N. rileyi* at 0.28% and 0.40%; carbaryl caused partial inhibition even at the lowest concentration tested (0.04%). Diflubenzuron

did not significantly inhibit *N. rileyi* and apparently promoted fungal growth at 0.16% and 0.28%. Only maneb completely inhibited *B. bassiana* at all concentrations tested. Complete inhibition occurred at 0.40% of benomyl, methomyl and diflubenzuron. Partial inhibition occurred at 0.04% of carbaryl and methyl parathion; however, 0.04% and 0.16% of methomyl and diflubenzuron had no significant effect on *B. bassiana* growth.

Descriptors/Keywords: BENOMYL, MANEB, METHYL PARATHION, DIFLUBENZURON, INHIBITION GROWTH, INTEGRATED CONTROL PROGRAM

Record - 425

SOME PARAMETERS OF BENZOYLPHENYL UREA TOXICITY TO BEET ARMYWORMS
SPODOPTERA EXIGUA LEPIDOPTERA NOCTUIDAE

GARNETT J; BISABRI-ERSHADI B; HEJAZI M J

J ECON ENTOMOL 76 (3). 1983. 399-402.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Five benzoylphenyl urea insect growth regulators, diflubenzuron, penfluron (2,6-difluoro-N-[[[4-(trifluoromethoxy)phenyl]amino]carbonyl]benzamide), Bay SIR 8514 (2-chloro-N-[[[4-(trifluoromethoxy)phenyl]amino]carbonyl]benzamide), EL 1215 (2,6-dimethoxy-N-[5-[4-(pentafluoroethoxy)phenyl]-1,3,4-thiadiazol-2-yl]benzamide) and UC 62644 (2,6-difluoro-N-[[[4-[3-chloro-5-trifluoromethyl-2-pyridinyl-oxy]-3,5-dichlorophenyl]amino]carbonyl]benzamide) were tested against *S. exigua* (Huebner) in laboratory bioassays. The order of LC50 values was UC 62644 > penfluron > EL 1215 > diflubenzuron > BAY SIR 8514 with a 35 .times. difference between the most and least toxic chemicals. Small differences in toxicity were observed between WP and T formulations. Treatments at the first 2 instars and the 4th-instar indicated that these age classes were nearly equally susceptible. Diflubenzuron, penfluron and BAY SIR 8514 were tested in 4th-instar topical bioassays. Penfluron showed the highest toxicity in the topical bioassays.

Descriptors/Keywords: INSECT GROWTH REGULATOR, PENFLURON, EL-1215 , DIFLUBENZURON, BAY-SIR-8514, UC-62644, LC-50, FORMULATION, TOPICAL APPLICATION

Record - 426

EFFECT OF DIFLUBENZURON AND ITS MAJOR DEGRADATION PRODUCTS ON THE GROWTH OF *EUGLENA GRACILIS* AND INCORPORATION OF UNIFORMLY LABELED CARBON-14 GLYCINE IN PROTEIN

GATTAVECCHIA E; DI PIETRA A M; TONELLI D; BORGATTI A

J ENVIRON SCI HEALTH PART B PESTIC FOOD CONTAM AGRIC WASTES 16 (2). 1981.159-166.

Full Journal Title: Journal of Environmental Science and Health Part B Pesticides Food Contaminants and Agricultural Wastes

Language: ENGLISH

ABSTRACT

Diflubenzuron (I) [an insect growth regulator] and its major degradation products 4-chlorophenyl urea (II), 2,6-difluorobenzoic acid (III) and 4-chloroaniline (IV) were tested for their activity on *Euglena gracilis*. The inhibition on the growth and on [U-14C]Gly incorporation in the protein of *Euglena* was measured in the presence of I-IV ranging 10-200 ppm 4-Chloroaniline caused a considerable inhibition at every tested level whereas I-III only slightly affected the incorporation. Diflubenzuron shows no effect on growth and protein biosynthesis for this nontarget organism.

Descriptors/Keywords: 4 CHLOROPHENYL UREA, 2 6 DI FLUORO BENZOIC-ACID, 4 CHLORO ANILINE, INSECT GROWTH REGULATOR

Record - 427

DETOXIFICATION AND SYNERGISM OF DIFLUBENZURON AND CHLORFLUAZURON IN THE RED FLOUR BEETLE TRIBOLIUM CASTANEUM

GAZIT Y; ISHAAYA I; PERRY A S

PESTIC BIOCHEM PHYSIOL 34 (2). 1989. 103-110.

Full Journal Title: Pesticide Biochemistry and Physiology

Language: ENGLISH

ABSTRACT

Chlorfluazuron (CFA), a benzoylphenyl urea insecticide, was found to be more potent than diflubenzuron (DFB) against *Tribolium castaneum* larvae. CFA was 37-fold more toxic than DFB against the fourth instar larvae but only 4-fold more against the first instar. While DFB had no effect on the pupal stage, CFA treatment resulted in a high level of pupa-adult intermediates. DFB was detoxified more rapidly than CFA in the larvae. Of the total amount applied to the larvae, 9% of the DFB could be detected in the pupae as compared with 40% of the CFA. No metabolites of CFA could be detected in either the larvae or the pupae, as compared with a high level of DFB metabolites, i.e., 4-chlorophenyl urea (4-CPU), 4-chloroaniline (4-CA), and polar materials. Hence, the retention time of CFA in the larval body ($T_{1/2} > 100$ hr) was much higher than that of DFB ($T_{1/2}$ simeq. 7 hr). The major metabolites of DFB in the larvae, determined as the percentage of the total recovery, were 4-CPU (6.6%), polar materials (1.8%), and 4-CA (3.6%). Simultaneous treatment of insects with DFB and esterase inhibitors such as phenyl saligenin cyclic phosphonate and S,S,S-tributylphosphorotrithioate resulted in decreased DFB metabolism and an increase in its $T_{1/2}$ to 9 and 18 hr, respectively. These inhibitors synergized considerably (2- to 3-fold) the larvicidal effect of DFB, but they did alter the toxicity of CFA. Hence, efficient synergists to DFB, based on inhibition of detoxification, might improve its toxicity and help maintain its rapid biodegradable property in the environment.

Descriptors/Keywords: INSECTICIDE, BIODEGRADABILITY, METABOLISM

Record - 428

BENDIOCARB AND DIFLUBENZURON AS SUBSTITUTE INSECTICIDES FOR ENDOSULFAN IN COMMERCIAL MUSHROOM GROWING

GEELS F P; RUTJENS A J

ANN APPL BIOL 120 (2). 1992. 215-224.

Full Journal Title: Annals of Applied Biology

Language: ENGLISH

ABSTRACT

Diflubenzuron and bendiocarb treatments of compost and casing soil at a rate of 1 g a.i./m² each, resulted in comparable or even improved compost and casing soil colonisation over endosulfan treatments (at a rate of 1.5 g a.i./m²). Alternating diflubenzuron/bendiocarb treatments were preferable to the reverse treatments, which tended to diminish total yield of mushrooms significantly by 1.4-3.9 kg/m². This effect was due to the casing soil treatment with diflubenzuron and not due to the compost treatment with bendiocarb after spawning. The effectiveness of these substitutes for endosulfan was tested on five commercial mushroom farms, where a similar or improved control of *Megaselia halterata* (Diptera: Phoridae) was obtained over control (endosulfan) treatments. If present, *Lycoriella auripila* (Diptera: Lycorridae) was very effectively controlled by the substitute insecticides compared with endosulfan. Relatively high numbers of *M. halterata* were occasionally observed in endosulfan-treated houses, indicating that a certain level of resistance towards this insecticide may already have developed. This assessment of tolerance in *M. halterata* emphasised the need for substitute insecticides with different modes of action, in addition to environmental reasons. The chemicals should be alternately applied within individual crops to avoid resistance development.

Descriptors/Keywords: MEGASELIA-HALTERATA, LYCORIELLA-AURIPILA, INSECT, FUNGUS,

CROP PEST CONTROL, RESISTANCE DEVELOPMENT AVOIDANCE, INSECTICIDE, COMPOST TREATMENT

Record - 429

GELMAN, D. B. AND A. B. BORKOVER. 1986. THE PHARATE ADULT CLASPER AS A TOOL FOR MEASURING CHITIN SYNTHESIS AND FOR IDENTIFYING NEW CHITIN SYNTHESIS INHIBITORS. COMP BIOCHEM. PHYSIO. 85(1):193-197.

Record - 430

STUDIES OF THE DISTRIBUTION BIOECOLOGY AND CONTROL OF STAURONEMATUS COMPRESSICORNIS F. IN BULGARIA

GEORGIEV G TS

NAUKA GORATA 27 (2). 1992. 72-78.

Language: BULGARIAN

ABSTRACT

The distribution, bioecology, harmfulness, and control of *Stauronematus compressicornis* F. in Bulgaria were studied. The pest was found to occur everywhere in this country, mainly in nurseries and young plantations. This insect leaves triple generation in North Bulgaria. Its larvae pass through 5 age stages, thus impacting plants during almost the whole growing season. Generally, *Stauronematus compressicornis* F. create thinned populations, hence the losses delivered are negligible in most of the cases. The adults are dangerous only in nurseries where mainly black and white poplars are attacked. The Dimilin WP-25 biotechnical preparation could be applied to the control of this pest when necessary, as in laboratory test-treatments of young larvae it demonstrated excellent results.

Descriptors/Keywords: POPLAR, FORESTRY, PEST CONTROL, PLANT GROWTH, DIMILIN WP-25 INSECTICIDE

Record - 431

EVALUATION OF THE INSECT GROWTH REGULATORS CYROMAZINE AND DIFLUBENZURON AS SURFACE SPRAYS AND FEED ADDITIVES FOR CONTROLLING HOUSEFLIES MUSCA DOMESTICA L. IN CHICKEN MANURE

GIGA D P

INT PEST CONTROL 29 (3). 1987. 66-69.

Full Journal Title: International Pest Control

Language: ENGLISH

ABSTRACT

The insect growth regulators (IGRs), cyromazine and diflubenzuron were tested as surface sprays and as admixes in the feed ration for their efficacy in controlling manure breeding flies (*Musca domestica* (L.)). Both IGRs, applied either as sprays or admixtures in feed rations, were found to be equally effective in controlling fly populations in chicken manure. Significant differences in the number of flies which emerged and the numbers of normal and abnormal pupae were found when the two methods of application were compared. The IGRs administered in the feed rations were more effective in controlling the houseflies than surface spray applications. The compounds were tested against laboratory-reared and field populations of flies.

Descriptors/Keywords: FORMULATION, PESTS

Record - 432

GIJSWIJT, M. J. 1982. EFFECTS OF DIFLUBENZURON ON FRESHWATER NON-TARGET ORGANISMS. REPORT DUPHAR B. V. NO. 576635/09/1982.

Record - 433

GIJSWIJT, M. J. 1981. DE ACUE TOXICITY VOOR MICRO-ORGANISM. REPORT DUPHAR B. V. NO. 56635/45/1981.

Record - 434

GIJSWIJT, M. J. 1978. INVESTIGATIONS WITH DIMILIN ON BEES. A SUMMARY OF REPORTS RECEIVED UP TO 1978 WITH CRITICAL ANNOTATIONS. REPORT PHILIPS-DUPHAR, B.V. NO. 56656/45A/1978.

Record - 435

GIJSWIJT, M. J. 1976. SIDE EFFECTS OF DIFLUBENZURON OF AQUATIC ORGANISMS. REPORT PHILIPS-DUPHAR. B. V. 56635/09/1982.

Record - 436

GILLETTE, N. L., J. L. ROBERTSON, AND R. L. LYON. 1978. BIOASSAYS OF TH6038 AND FIFLURON APPLIED TO WESTERN SPRUCE BUDWORM CHORISTONEURA OCCIDENTALIS AND DOUGLAS-FIR TUSsock MOTH ORGYIA PSEUDOTSUGATA. J. ECON. ENTOMOL 71(2):319-322.

Record - 437

GLEN, D. M., N. F. MILSON, C. W. WILTSHIRE, AND M.P. RUBY. 1982. SIR 8514 COMPARED WITH DIFLUBENZURON FOR CONTROL OF ORCHARD MOTHS AND APPLE SUCKER (CODLING MOTH, TORTRIX MOTHS, LEAFROLLERS, WINTER MOTH, EARLY CATERPILLARS). ANNALS OF APPLIED BIOLOGY 100(3):6-7.

Record - 438

EVALUATION OF INSECTICIDE DIPS AS PROTECTANTS OF STORED DRIED FISH FROM DERMESTID BEETLE INFESTATION

GOLOB P; COX J R; KILMINSTER K

J STORED PROD RES 23 (1). 1987. 47-56.

Full Journal Title: Journal of Stored Products Research

Language: ENGLISH

ABSTRACT

Dried tilapia species were dipped for 4 s in 10 l of solutions containing, at two concentrations, pirimiphos-methyl, iodofenphos, fenitrothion, diflubenzuron or deltamethrin. After draining excess fluid the fish were left in a store at Lake Turkana, Northern Kenya, where they were subjected to infestation by *Dermestes maculatus* Degeer (Coleoptera: Dermestidae). The treatments were compared with untreated or water dipped controls and to fish dipped in a commercial formulation of pyrethrins synergised with piperonyl butoxide. All treatments gave good protection for 2 months but only the deltamethrin gave adequate control for 6 months. Deltamethrin had a distinct repellent of which was lacking with other treatments except the natural pyrethrins. There was no difference in effectiveness between high and low dosages nor between different formulations. Low dosages of each treatment produced residues in fish that were similar to the maximum recommended for raw cereals and pulses and can be regarded as levels that would be safe for human consumption. The results suggest that deltamethrin and pirimiphos-methyl have potential for use as long lasting protectants of dried fish in store.

Descriptors/Keywords: DERMESTES-MACULATUS, PIRIMIPHOS-METHYL, IODOFENPHOS, FENITROTHION, DIFLUBENZURON, DELTAMETHRIN, FOOD RESIDUE, REPELLENT, INSECT

GROWTH REGULATOR, KENYA

Record - 439

EFFECTS OF TWO INSECT GROWTH REGULATORS ON THE LARVAL AND PUPAL STAGES OF THE CABBAGE MAGGOT DIPTERA ANTHOMYIIDAE

GORDON R; YOUNG T-L; CORNECT M; HONG D K

J ECON ENTOMOL 82 (4). 1989. 1040-1045.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Treatment of third instars and recently molted pupae of *Delia radicum* (L.) with methoprene suppressed eclosion to the adult stage in relation to the concentration applied. The fecundity of adults that developed from larvae and pupae treated with methoprene was not reduced compared with controls. Diflubenzuron, when applied topically in dimethylsulfoxide to larvae, did not affect the degree of adult eclosion or the fecundity of resultant adults. Eclosion was significantly suppressed by treatment of pupae with a high (1.0 .mu.g per insect) concentration of diflubenzuron in dimethylsulfoxide; adults that developed from treated pupae oviposited fewer eggs, with impaired capacity to hatch. However, Dimilin (a water-based commercial formulation of diflubenzuron) did not affect eclosion, and the fecundity of adults that developed from treated pupae was comparable to that of controls.

Descriptors/Keywords: DELIA-RADICUM, METHOPRENE, FECUNDITY, ECLOSION, DIFLUBENZURON, DIMILIN, DMSO, PESTS, BIOLOGICAL CONTROL

Record - 440

TOXICITY OF THE INSECT GROWTH REGULATOR DIFLUBENZURON TO THE ROVE BEETLE ALEOCHARA BILINEATA A PARASITOID AND PREDATOR OF THE CABBAGE MAGGOT DELIA RADICUM

GORDON R; CORNECT M

ENTOMOL EXP APPL 42 (2). 1986. 179-186.

Full Journal Title: Entomologia Experimentalis et Applicata

Language: ENGLISH

ABSTRACT

The insect growth regulator Dimilin, a common name: diflubenzuron, applied at concentrations effective against the cabbage maggot *Delia radicum* L., did not affect the hatching of eggs of the staphylinid predator and parasite, *Aleochara bilineata* Gyllenhal. Applied externally in distilled water, Dimilin was non-toxic to first instar larvae, to larval instars developing within host puparia, and to adults. When Dimilin was dissolved in dimethylsulfoxide, then applied to the exoskeleton of host puparia, emergence of *A. bilineata* adults was suppressed. The conventional insecticide Furadan, at a concentration (0.001% in distilled water) equal to the lowest concentration of Dimilin used, was toxic to both eggs and larvae of *A. bilineata*.

Descriptors/Keywords: EGG, LARVA, DIMILIN, FURADAN, INSECTICIDE

Record - 441

GORMON, J. D. 1975. EVALUATION OF DIMILIN W-25 FOR THE CONTROL OF MOSQUITO LARVAE, CULEX NIGRIPALPUS, CULEX QUINQUEFASCIATUS, AEDES TAENIORHYNCHUS, AND PSOROPHORA CONFINNIS. REPORT THOMPSON-HAYWARD CHEMICAL CO. NO. C3841.

Record - 442

SYNERGISM OF 2 BENZOYLPHENYL UREA INSECT GROWTH REGULATORS

GRANETT J; HEJAZI M J

J ECON ENTOMOL 76 (3). 1983. 403-406.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

An omnivorous leafroller, *Platynota stultana* Walsingham, and the beet armyworm, *Spodoptera exigua* (Huebner), are, respectively, tolerant and susceptible to the benzoylphenyl ureas diflubenzuron and BAY SIR 8514 (2-chloro-N-(((4-(trifluoromethoxy)phenyl)amino)carbonyl)benzamide). LC50 values for diflubenzuron and BAY SIR 8514 in artificial diet for 1st instars were, respectively, 6938 and 173 ppm with *P. stultana* and 1.10 and 8.06 ppm with *S. exigua* DEF (S,S,S-tributylphosphorotrithioate), an esterase inhibitor, synergized diflubenzuron and BAY SIR 8514 3319- and 45-fold, respectively, in *P. stultana*, but was not synergistic in *S. exigua*. Piperonyl butoxide, an oxidase inhibitor, did not synergize either benzoylphenyl urea in either insect.

Descriptors/Keywords: PLATYNOTA-STULTANA, SPODOPTERA-EXIGUA, DIFLUBENZURON, BAY-SIR-8514, LC-50, PIPERONYL BUTOXIDE, S S S TRI BUTYL PHOSPHOROTRITHIOATE, ARTIFICIAL DIET, ESTERASE, OXIDASE

Record - 443

METABOLIC BASIS OF DIFFERENTIAL SUSCEPTIBILITY OF 2 FOREST LEPIDOPTERANS TO DIFLUBENZURON

GRANETT J; ROBERTSON J; RETNAKARAN A

ENTOMOL EXP APPL 28 (3). 1980. 295-300.

Full Journal Title: Entomologia Experimentalis et Applicata

Language: ENGLISH

ABSTRACT

Sixth instar *Choristoneura occidentalis* Freeman and 5th instar *Orgyia pseudotsugata* (McDunnough) were fed ring-labeled ¹⁴C-diflubenzuron coated on Douglas-fir needles [*Pseudotsuga menziesii*]. After ingestion, the gut was purged of radioactive needle residues with an artificial diet. Radioactivity in body and frass extracts and residues were measured. Diflubenzuron in extracts were separated from metabolites by TLC. Ninety and 86% of the ingested diflubenzuron passed through the body without being absorbed in *C. occidentalis* and *O. pseudotsugata*, respectively. Bodies of *C. occidentalis* retained 0.3% of ingested diflubenzuron, while *O. pseudotsugata* retained 5.3%. This difference in percent diflubenzuron retention in the body was negatively correlated with percent relative metabolism in the 2 spp. Relative toxicities of diflubenzuron to the 2 spp. may be related to percent retained diflubenzuron which may be due to a significant difference in relative metabolism.

Descriptors/Keywords: CHORISTONEURA-OCCIDENTALIS, ORGYIA-PSEUDOTSUGATA, PSEUDOTSUGA-MENZIESII, CARBON-14 RING LABEL

Record - 444

GRANETT, J., D. DUNBAR, AND R. WESELOH. 1978. GYPSY MOTH CONTROL WITH DIMILIN SPRAYS TIMED TO MINIMIZE EFFECTS ON THE PARASITE APANTELES MELANOSCELU. J. OF ECONOM. ENTOMOL 69(3):403-404.

Record - 445

GRANETT, J., S. MORANG, AND R. HATCH. 1978. REDUCED MOVEMENT OF PRECOCIOUS MALE ATLANTIC SALMON PARR INTO SUBLETHAL DIMILIN-G1 (LARVACIDE) AND CARRIER CONCENTRATIONS [TOXICITY]. BULL. ENVIRON. CONTAM. TOXICOL. 19 (4):462-464.

Record - 446

STADIAL SUSCEPTIBILITY OF EASTERN SPRUCE BUDWORM CHORISTONEURA FUMIFERANA
LEPIDOPTERA TORTRICIDAE TO THE INSECT GROWTH REGULATOR DIMILIN

GRANETT J; RETNAKARAN A

CAN ENTOMOL 109 (6). 1977 893-894.

Full Journal Title: Canadian Entomologist

Language: ENGLISH

ABSTRACT

The precise EC50 [median effective concentration] values for Dimilin and relative susceptibility during all stadia have been established. Spruce budworm larvae became more susceptible to Dimilin with each successive molt. The 2nd instar (the first instar does not feed) was least affected and the 6th was the most affected. The EC50 values decreased by a factor averaging 0.45-0.07 SD for each stadium. The high EC50 value for spruce budworm may in part explain the poor control achieved with Dimilin in field tests (Dimond 1975). Based on the stadal susceptibility, testing of Dimilin in the field during the more susceptible 5th and 6th stadia seems warranted, rather than the conventional 3rd and 4th stadia. Retnakaran and Smith (1975) noted that 6th instars treated with Dimilin produced abnormal pupae typical of juvenile hormone analogue treatments. This finding, with the data presented in this report showing that larvae become more susceptible with age, indicates that Dimilin may have more than one mode of action against spruce budworm. Other insects should similarly be treated with Dimilin at more than one larval stadium to determine the most susceptible period for treatments.

Descriptors/Keywords: MEDIAN EFFECTIVE CONCENTRATIONS, AGE CORRELATION

Record - 447

GRANETT, J. AND R.M. WESELOH. 1975. FIMILIN TOXICITY TO THE GYPSY MOTH (PORTHETRIA DISPAR) LARVAL PARASITOID, APANTELES MELANOSCELUS. J. ECON. ENTOMOL. 68(5):577-580.

Record - 448

GRANETT J., R. M. WESELOH, AND D. M. DUNBAR. 1975. DIMILIN TOXICITY TO APANTELES MELANOSCELUS (RATZEBURG) (HYMENOPTERA: BRACONIDAE) AND EFFECTS ON FIELD POPULATIONS. J. N.Y. ENTOMOL. SOC. 83 (4):242-243.

Record - 449

A STUDY OF THE EFFECT OF SOME WIDELY USED IN THE PRACTICE INSECTICIDES ON
SILKWORM BOMBYX MORI L. DEVELOPMENT

GREKOV D; NIIKOLOV A; SENGALEVICH G

ZHIVOTNOV'D NAUKI 29 (1-4). 1992. 91-97.

Full Journal Title: Zhivotnov'Dni Nauki

Language: BELORUSSIAN

ABSTRACT

In 1988-1989 with the purpose to draw up a scale of sensitivity of the silkworm to insecticides, currently widely used in the agricultural practice of this country, were conducted tests of 13 insecticides in the rearing period of the silkworm. It was found that the insecticides dursban 4 EK, Bi-58, decis 2.5 EK vastak 10 EK, lanat 20 EK, and sevin 85 NP, were highly detrimental to silkworm larvae of instar III and the spun cocoons were of deteriorated technologic quality. It was observed that Hessa 2, of the experimented races, distinguished itself by racial resistability to the single insecticides - a quality that could be taken into consideration in selection work. The insecticides alistin 25 VP and dimilin 25 VP impeded transition from a larva phase to another and caused coloration of silkworm larvae.

Descriptors/Keywords: DURSBAN

Record - 450

COMPARATIVE EFFECTS OF STEINERNEMA FELTIAE NEMATODA STEINERNEMATIDAE AND INSECTICIDES ON YIELD AND CROPPING OF THE MUSHROOM AGARICUS BISPORUS

GREWAL P S; RICHARDSON P N; COLLINS G; EDMONDSON R N

ANN APPL BIOL 121 (3). 1992. 511-520.

Full Journal Title: Annals of Applied Biology

Language: ENGLISH

ABSTRACT

In a mushroom crop (*Agaricus bisporus*) affected by a very low level of sciarid fly (*Lycoriella auripila*) infestation, the effects of an indigenous isolate of insect-parasitic nematode (*Steinernema feltiae*) and of two commonly used insecticides (diazinon and diflubenzuron) were studied. When compared with untreated plots, nematodes applied to the casing had no adverse effects on mushroom yields whereas insecticides decreased yields. At a rate of 3 times, 106 infective juveniles per tray (surface area = 0.56 m²). *S. feltiae* elicited increases of 28.5% and 19% in the mean total numbers and weights of mushrooms respectively. Treatment only with diflubenzuron resulted in 14.6% and 6% reductions in mean total numbers and weights of mushrooms, respectively; treatment with both diazinon and diflubenzuron caused 18.5% and 9.4% losses. Application of nematodes generally reduced the mean weight per mushroom whereas insecticides increased it; nematodes delayed the onset of mushroom production (first flush) whereas diflubenzuron delayed the third and fourth flushes. Nematode contamination of sporophores was minimal when *S. feltiae* was applied at casing. Although their numbers declined with time, the nematodes persisted, in the casing layer, throughout the cropping period of seven weeks. It is concluded that yield benefits associated with nematode application can result mainly from nematode effects on *A. bisporus* and not solely from suppression of a damaging pest population.

Descriptors/Keywords: LYCORIELLA-AURIPILA, INVERTEBRATE, FUNGUS, PLANT CROP INDUSTRY, INSECTICIDE, INTEGRATED PEST MANAGEMENT, BIOLOGICAL CONTROL

Record - 451

EFFECT OF PESTICIDE TREATMENTS ON NONTARGET ORGANISMS IN CALIFORNIA RICE PADDIES I. IMPACT OF TRIPHENYL TIN HYDROXIDE

GRIGARICK A A; WEBSTER R K; MEYER R P; ZALOM F G; SMITH K A

HILGARDIA 58 (1). 1990. 1-36.

Full Journal Title: Hilgardia

Language: ENGLISH

ABSTRACT

An application of triphenyltin hydroxide at 1.16 kg (AI)/ha to rice fields for stem rot (*Sclerotium oryzae* Catt.) control resulted in a significant reduction of 57% of the invertebrate taxa and 67% fewer individuals based on two collecting methods that sampled the nekton, neuston, and benthon. Populations of herbivores, carnivores, and filter feeders were sharply reduced after treatment, and most remained so through the 28th day following application. By day 50 many of the winged species recovered in both numbers and diversity. However, recovery of benthic organisms was slower or not at all for most Crustacea. An initial reduction followed by a strong resurgence was noted for the mosquito *Culex tarsalis* Coq., which was probably due to the significant reduction of five predaceous species. Two benzoylphenyl ureas, diflubenzuron and triflumuron, were evaluated in California rice fields to determine their ecological impact on populations of nontarget organisms. Modified minnow traps, drag net, and kellen dredge sampling devices were used in the collecting. Nontarget populations were sampled continuously throughout much of the 1985 and 1986 rice growing season. Total collections of nontargets showed only two Cypris species of seed shrimp crustaceans were significantly ($P < 0.05$) reduced over time due to either chemical. One predaceous water boatman, *Corisella decolor*, showed the opposite pattern in that populations were significantly ($P < 0.05$) lower in the control. Significant

differences were not observed in species diversity or between treatments when grand means for all species by sampling device were calculated. A total of 35 families and 58 taxa were collected from these two studies.

Descriptors/Keywords: SCLEROTIUM-ORYZAE, CULEX-TARSALIS, CYPRIS, CORISELLA-DECOLOR, DIVERSITY, NEKTON, NEUSTON, BENTHON, USA

Record - 452

GRIM, J. S. 1977. FRESHWATER FISH RESIDUE TRIAL WITH DIMILIN W-25 AND CHANNEL CATFISH. REPORT NORTHEASTERN BIOLOGISTS INC. RHINEBECK, N.Y.

Record - 453

GROSS, L. 1988. PERSONAL COMMUNICATION IN: PESTICIDE BACKGROUND STATEMENTS. VOL IV INSECTICIDES, USDA FOREST SERVICE, AG. HANDBOOK 685, JULY 1989.

Record - 454

RESISTANCE TO DIFLUBENZURON IN INSECTS

GROSSCURT A C; STOKER A

FORTY-THIRD INTERNATIONAL SYMPOSIUM ON CROP PROTECTION, PART IV. MEDED FAC LANDBOUWWET RIJKSUNIV GENT 56 (3 PART B). 1991. 1151-1159.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: PLUTELLA-XYLOSTELLA, PHYLLONORYCTER-BLANCARPELLA, LEUCOPTERA-SCITELLA, MUSCA-DOMESTICA, CYDIA-POMONELLA, LARVICIDE, OVICIDAL RESISTANCE, OXIDASE INHIBITOR, ESTERASE INHIBITOR, CYROMAZINE, INSECTICIDE, PEST CONTROL METHOD, ITALY

Record - 455

EFFECTS OF TEMPERATURE ON ACARICIDAL AND INSECTICIDAL ACTIVITIES OF THE BENZOYLUREAS FLUCYCLOXURON AND DIFLUBENZURON

GROSSCURT A C; WIXLEY R A J

ENTOMOL EXP APPL 59 (3). 1991. 239-248.

Full Journal Title: Entomologia Experimentalis et Applicata

Language: ENGLISH

ABSTRACT

Effects of temperature on the activity of flucycloxaduron on larval stages of *Panonychus ulmi* (Koch), based on LC50 values, were highly significant ($P < 0.001$) with temperature coefficients of -1.7 in both the ranges of 15.degree. to 25.degree. C and 20.degree. to 30.degree. C. The slopes of probit regression lines at 15.degree. C and 20.degree. C were significantly steeper than those at 25.degree. and 30.degree. C. As a consequence the temperature coefficients based on LC90 values were -4.4 and -2.2, for the 2 temperature ranges. The ovicidal activity of flucycloxaduron on *P. ulmi* was low and was only statistically detectable at 20.degree. C (LC90 of 84 mg a.i./l). In studies with larvae of *Aedes aegypti* (Linnaeus), *Leptinotarsa decemlineata* (Say), *Plutella xylostella* (Linnaeus), *Spodoptera exigua* (Hubner) and *Spodoptera littoralis* (Boisduval) probit regression lines were parallel over temperature. The activity of flucycloxaduron on these five insect species was not affected by temperature. Based on LC50 values, diflubenzuron showed positive temperature coefficients on *P. xylostella* of +2.1 at 15.degree. to 25.degree. C and +2.5 at 20.degree. to 30.degree. C. For *S. littoralis* the temperature coefficient was positive (+2.4) at 15.degree. to 25.degree. C but negative (-1.9) at the 20.degree. to 30.degree. C range. Temperature coefficients of diflubenzuron were neutral for *A. aegypti*, *L. decemlineata* and *S. exigua*. In

the design and analysis of these studies special allowance was made for date effects and variation in natural mortality over temperature.

Descriptors/Keywords: PANONYCHUS-ULMI, AEDES-AEGYPTI, LEPTINOTARSA-DECEMLINEATA, PLUTELLA-XYLOSTELLA, SPODOPTERA-EXIGUA, SPODOPTERA-LITTORALIS, LARVAL STAGE, TEMPERATURE COEFFICIENT

Record - 456

PH-70-23 A NEW ACARICIDE AND INSECTICIDE INTERFERING WITH CHITIN DEPOSITION
GROSSCOURT A C; TER HAAR M; JONGSMA B; STOKER A

PESTIC SCI 22 (1). 1988. 51-60.

Full Journal Title: Pesticide Science

Language: ENGLISH

ABSTRACT

PH 70-23 is a new benzoylphenylurea interfering with chitin deposition. In larvae of Spodoptera littoralis, incorporation of N-acetyl-glucosamine into chitin was equally inhibited by PH 70-23 and diflubenzuron, the first commercially available benzoylphenylurea. In contrast to diflubenzuron, which is active only against insects and eriophyid mites, PH 70-23 has the advantage of also being highly active on spider mites. The latter activity might be partly due to leaf penetration of PH 70-23. Laboratory experiments indicate PH 70-23 to have a better ovo-larvicidal activity than the commercial acaricides tested (cyhexatin, dicofol, fenbutatin oxide and tetradifon) against Tetranychus cinnabarinus, T. turkestanii, T. urticae and Panonychus ulmi. A method in which eggs were deposited on residues of cyhexatin or fenbutatin oxide resulted in much lower activities than application of the spray liquid after egg deposition. Activities of PH 70-23, dicofol and tetradifon were hardly influenced by this difference in the test method. The direct contact activity of PH 70-23 on eggs of mites is influenced by the relative humidity and the age of the eggs. The total ovolarvicidal activity of PH 70-23 is only slightly positively influenced by the relative humidity, however. Ovicidal activity of PH 70-23 is also achieved by transovarial transmission. The compound does not influence the fertility of the mites. Comparison of a strain of T. urticae, resistant to dicofol, parathion and tetradifon, with a susceptible strain indicated absence of cross-resistance of PH 70-23. Compared to diflubenzuron, PH 70-23 shows an interesting shift in the spectrum of insecticidal activity.

Descriptors/Keywords: SPODOPTERA-LITTORALIS, TETRANYCHUS-CINNABARINUS, TETRANYCHUS-TURKESTANI, TETRANYCHUS-URTICAE, PANONYCHUS-ULMI, EGGS, OVOLARVICIDE, DICOFOL, PARATHION, TETRADIFON, DIFLUBENZURON, RESISTANCE, PESTS

Record - 457

EFFECTS OF FLUORINE SUBSTITUENTS ON BIOLOGICAL ACTIVITY AND ENVIRONMENTAL CHEMISTRY OF BENZOYLPHENYLUREAS

GROSSCOURT A C; LUTEIJN J M; TIPKER J; WILLEMS A G M; DUPHAR B V

190TH AMERICAN CHEMICAL SOCIETY NATIONAL MEETING, CHICAGO, ILL., USA, SEPT. 8-13, 1985. ABSTR PAP AM CHEM SOC 190 (0). 1985. NO PAGINATION.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: ABSTRACT, DIMILIN, DIFLUBENZURON, INSECT GROWTH REGULATOR, STRUCTURE-ACTIVITY RELATIONSHIPS

Record - 458

LARVICIDAL AND OVICIDAL RESISTANCE TO DIFLUBENZURON IN THE HOUSE FLY

MUSCA DOMESTICA

GROSSCURT A C

PROC K NED AKAD WET SER C BIOL MED SCI 83 (2). 1980. 127-142.

Full Journal Title: Proceedings of the Koninklijke Nederlandse Akademie van Wetenschappen Series C Biological and Medical Sciences

Language: ENGLISH

ABSTRACT

Upon selection with diflubenzuron incorporated into the larval culture medium, development of both larvicidal and ovicidal resistance was studied in a susceptible laboratory strain (S) and a multiresistant strain (Nic) of the housefly. In addition to changes in larvicidal and ovicidal activity, selection also resulted in growth retardation, decreased pupal weight, diminished adult fertility and fecundity and an increase in pupal mortality. These effects led to a collapse in the F32 of strain Nic, in spite of a lowered selection pressure during previous generations when these deleterious effects were apparent. Observations for this study with strain S were discontinued in the F40. The final assessment of the development of larval resistance in strain Nic was made in the F26, where it showed a 13.6-fold increase based upon LC50 values. In the F40 of strain S larval resistance had developed to an about 40-fold level. These resistance levels cannot be considered high. The ovicidal activity in the F40 of strain S had decreased 32-fold, which factor is comparable with that obtained for the development of resistance initially followed a similar pattern as in strain S. Resistance increased drastically. In the F26 the highest test concentration of 3000 mg a.i.[active ingredient]/l of diflubenzuron showed ovicidal activity of 26%. Factors of cross-resistance to diflubenzuron were assessed in the parental generation of strain Nic and in 2 field-collected strains (SL and AA). As compared with strain S, larvicidal cross-resistance was absent in strain Nic and strain SL. In strain AA it amounted to a factor of 5. Ovicidal cross-resistance factors were 3.5 for strain Nic, 8.4 for strain SL and 87.5 for strain AA, all factors based on LC50 values. The level of ovicidal cross-resistance is probably related to the resistance of adults against some standard insecticides tested.

Descriptors/Keywords: MULTI RESISTANT STRAIN, PUPAL MORTALITY, SELECTION PRESSURE, INSECTICIDE

Record - 459

EFFECTS OF DIFLUBENZURON ON SOME CHEMICAL AND MECHANICAL PROPERTIES OF THE ELYTRA OF *LEPTINOTARSA DECEMLINEATA*

GROSSCURT A C; ANDERSEN S O

PROC K NED AKAD WET SER C BIOL MED SCI 83 (2). 1980. 143-150.

Full Journal Title: Proceedings of the Koninklijke Nederlandse Akademie van Wetenschappen Series C Biological and Medical Sciences

Language: ENGLISH

ABSTRACT

Effects of diflubenzuron on elytra of *L. decemlineata* were measured during the first 11 days after adult emergence. The parameters studied were mechanical penetrability, amounts of chitin and protein, and the yield of ketocatechols. The amount of protein in the elytra was the only parameter which was unaffected by the treatment. Chitin synthesis and change in mechanical penetrability were strongly affected by diflubenzuron; both parameters were inhibited by 50% at a concentration between 3 and 10 mg a.i.[active ingredient]/l. The yield of ketocatechols, a parameter related to the degree of tanning, was inhibited by 50% at a diflubenzuron concentration between 300 and 1000 mg a.i./l. Interference of diflubenzuron with the tanning process may be of a secondary nature.

Descriptors/Keywords: CHITIN, PROTEIN, KETOCATECHOLS

Record - 460

EFFECTS OF DIFLUBENZURON ON MECHANICAL PENETRABILITY CHITIN FORMATION AND

STRUCTURE OF THE ELYTRA OF LEPTINOTARSA DECEMLINEATA

GROSSCOURT A C

J INSECT PHYSIOL 24 (12). 1978. 827-832.

Full Journal Title: Journal of Insect Physiology

Language: ENGLISH

ABSTRACT

In untreated adults of *L. decemlineata* the mechanical penetrability of the elytra decreases until about 10 days after adult emergence. At any time during this period, this change in penetrability can be blocked by administering diflubenzuron. The blocking (by diflubenzuron) of the process by which the penetrability decreases shows identical kinetics as the inhibition of chitin formation by this compound. Histological observations of elytra revealed several types of mesocuticles. Treatment with diflubenzuron causes characteristic distortions in each of them.

Descriptors/Keywords: INSECTICIDE, HISTOLOGY

Record - 461

GROSSCOURT, A. C. 1978. DIFLUBENZURON: SOME ASPECTS OF ITS OVICIDAL AND LARVICIDAL MODE OF ACTION AND AN EVALUATION OF ITS PRACTICAL POSSIBILITIES. PEST. SCI. 9(5):373-386.

Record - 462

EFFECT OF FOUR CHITIN SYNTHESIS INHIBITORS ON THE RED COTTON BUG

DYSDERCUS KOENIGII FABRICIUS

GUJAR G T; MEHROTRA K N

ENTOMON 14 (1-2). 1989. 71-74.

Full Journal Title: Entomon

Language: ENGLISH

ABSTRACT

Effect of four chitin synthesis inhibitors, diflubenzuron, penfluron, teflubenzuron and triflumuron, on the last instar nymphs of the red cotton bug, *Dysdercus koenigii* Fabricius was studied. It was observed that of these four chemicals, penfluron was the most effective chitin synthesis inhibitor against *D. koenigii*. LD50 values expressed in .mu.g/nymph were found to be diflubenzuron 0.269, penfluron 0.025, teflubenzuron 0.112 and triflumuron 0.359. The results of the present investigations showed that chitin synthesis inhibitors possessed high contact activity against the hemipterous insect species, *D. koenigii*.

Descriptors/Keywords: DIFLUBENZURON, PENFLURON, TEFLUBENZURON, TRIFLUMURON, INSECTICIDES

Record - 463

EFFECT OF AN INSECT GROWTH REGULATOR ON THE GROWTH AND DEVELOPMENT OF THE TOBACCO CATERPILLAR SPODOPTERA LITURA FABRICIUS

GUJAR G T; MEHROTRA K N

PROC INDIAN ACAD SCI ANIM SCI 95 (6). 1987. 689-694.

Full Journal Title: Proceedings of the Indian Academy of Sciences Animal Sciences

Language: ENGLISH

ABSTRACT

Effect of an insect growth regulator BASF LAB 153 959 I was studied on the various stages of *Spodoptera litura* Fabr. BASF growth regulator of substituted urea type had a similar action on diflubenzuron and was effective against larval stages of *Spodoptera litura*. It was ineffective against egg and pupal stages due to poor contact action. It affected adversely fecundity of female moth and fertility of eggs.

Descriptors/Keywords: INSTAR, FERTILITY, BASF LAB-153959I, DIFLUBENZURON, BIOLOGICAL CONTROL

Record - 464

TOXICITY AND MOLT ACCELERATING EFFECTS OF DIFLUBENZURON ON THE BARNACLE
BALANUS Eburneus

GULKA G; DOSCHER C M; WATABE N

BULL ENVIRON CONTAM TOXICOL 25 (3). 1980. 477-481.

Full Journal Title: Bulletin of Environmental Contamination and Toxicology

Language: ENGLISH

Descriptors/Keywords: FEED INTAKE, EXOSKELETON, MORTALITY, INSECTICIDE

Record - 465

EFFECT OF THREE BENZOYLPHENYL UREA COMPOUNDS ON LARVAE OF RICE MOTH
CORCYRA CEPHALONICA STANTON

GUPTA D; VERMA A K

INDIAN J PLANT PROT 20 (2). 1992. 174-177.

Full Journal Title: Indian Journal of Plant Protection

Language: ENGLISH

Descriptors/Keywords: PENFLURON, DIFLUBENZURON, A13-63220, INSECTICIDE

Record - 466

EVALUATION OF NEW SYNTHETIC PYRETHROIDS AND FORMULATIONS AGAINST BOLLWORM
COMPLEX IN COTTON

GUPTA G P; KATIYAR K N

PESTICIDES (BOMBAY) 21 (4). 1987. 20-22.

Full Journal Title: PESTICIDES (Bombay)

Language: ENGLISH

Descriptors/Keywords: FLUCYTHRINATE, FENVALERATE, DIFLUBENZURON, FENPROPATHRIN,
FLUVALINATE, CYPERMETHRIN, INSECTICIDES, PESTS, AGRICULTURE CROP INDUSTRY

Record - 467

EFFECT OF TOPICAL APPLICATION OF DIFLUBENZURON AND PENFLURON ON NEWLY
FLEDGED POTATO BEETLE EPILACHNA VIGINTIOCTOPUNCTATA FAB

GUPTA P R; DOGRA G S

J INSECT SCI 3 (2). 1990. 122-126.

Language: ENGLISH

ABSTRACT

Diflubenzuron (DF) topically applied to imagines up to 20 h of eclosion at 30 and 20 μ g proved lethal and half of treated beetles died within 5 days of emergence. Post-ecdysial cuticle of DF and penfluron (PF) treated adults remained soft and morphological abnormalities appeared in the form of ballooning of hind wings at higher dose, splayed and paralysed legs often with fractures. The treatment did not interfere with feeding and gain in weight. Pre-oviposition period and rate of egg laying till survival were not affected. Longevity and fecundity were reduced, particularly by DF while PF was better in egg hatch inhibition. Males surviving the treatment had strong mating instinct but with a poor mating success. They invariably failed to protrude the siphon from the genital pocket, which had broken tip. However, the treatment of males at 3-day age did not affect them in any way.

Descriptors/Keywords: IMAGO, ADULT, CUTICLE, HIND WING, LEG PARALYSIS, MORPHOLOGICAL ABNORMALITY, OVIPOSITION, FECUNDITY, MATING PERFORMANCE, MORTALITY, LONGEVITY, INSECTICIDE

Record - 468

ACTIVITY AND FATE OF CHLORFLUAZURON AND DIFLUBENZURON IN THE LARVAE OF SPODOPTERA LITTORALIS AND HELIOTHIS VIRESCENS

GUYER W; NEUMANN R

PESTIC BIOCHEM PHYSIOL 30 (2). 1988. 166-177.

Full Journal Title: Pesticide Biochemistry and Physiology

Language: ENGLISH

ABSTRACT

Larvicidal activity, inhibition of chitin synthesis, and metabolic fate of chlorfluazuron and diflubenzuron were investigated in the larvae of *Heliothis virescens* and two strains of *Spodoptera littoralis* (normal sensitive (sens.) and organo-phosphate resistant (OP-R)). When injected, chlorfluazuron was more toxic than diflubenzuron by two orders of magnitude. No cross-resistance was apparent in the *S. littoralis*, OP-R strain. Both compounds were similarly potent inhibitors of chitin synthesis in vivo 2 hr after injection but this inhibition persisted with chlorfluazuron only. The in vivo half-lives of chlorfluazuron and diflubenzuron were estimated to be about 50 and 5 h, respectively, indicating that different rates of detoxification could account for the different persistence of chitin synthesis inhibition and in turn also for the toxicological differences in insects. Detoxification of the two compounds occurred primarily by metabolic degradation. As a result of its fast metabolism, the larvicidal activity of diflubenzuron was highly dependent on the mode of application. After continuous exposure, the LD50s were found to be low compared to the effect of an application early in the instar and during a short period of time only. A failure to ecdyse was observed with high doses, while at low doses moulting was apparently normal, but the larvae ceased their development after ecdysis and starved to death. Differential susceptibility of the chitinous organs might be the reason for this effect.

Descriptors/Keywords: STRAIN DIFFERENCE, RESISTANCE, CHITIN SYNTHESIS INHIBITION, ECDYSIS, MEDIAN LETHAL DOSE, STARVATION, ORGANOPHOSPHATE INSECTICIDE, TOXICOKINETICS, TOXICODYNAMICS, DETOXIFICATION, APPLICATION, MODE

Record - 469

DEVELOPMENT OF AN INSECT GROWTH REGULATOR CHLORFLUAZURON

HAGA T; TOKI T; TSUJII Y; NISHIYAMA R

J PESTIC SCI 17 (2). 1992. S103-S113.

Full Journal Title: Journal of Pesticide Science

Language: JAPANESE

ABSTRACT

The authors, with the intention of exploring an insecticide bearing a new mechanism other than nervous system inhibition and hence possible low mammalian-toxicity, focused as a lead on the biological profile of the benzoylphenylurea (BPU) compounds during their research works and finally selected chlorfluazuron which was marketed against lepidopterous pests of vegetables and fruit trees in 1988 as Atabron and also Helix and Aim in Japan and foreign countries, respectively. At the time of the commencement of the exploration, the consideration was put on the following three attempts: 1. setting up of a new bio-assay system eligible for the detection of slow larvicidal activity specific to the BPU IGRs, 2. diversification of trifluoromethylpyridine intermediate already industrialized through the development of fluazifop-butyl, and 3. examination of utilization of a new clemorational design based on the trifluoromethylpyridine synthons as a building block for the molecule set-up. Chlorfluazuron selected among the closely related pyridyloxyphenyl-benzoylureas showed far surpassing insecticidal activity over the lead diflubenzuron against specific target insects such as

lepidoptera, diptera and orthoptera at their larval stages by chitin biosynthesis inhibition mechanism. The detailed history before and after the exploration, larvicidal activity and selectivity, quantitative structure-activity relations, synthesis, toxicology etc. with respect to chlorfluazuron are discussed.

Descriptors/Keywords: ORTHOPTERA, DIPTERA, LEPIDOPTERA, INSECT, FRUIT TREES, VEGETABLES, PLANT CROP INDUSTRY, HORTICULTURE, BIOLOGICAL CONTROL, INTEGRATED PEST MANAGEMENT, INSECTICIDE, LARVICIDE, FLUAZIFOP-BUTYL, HELIX ATABRON, AIM, CHITIN BIOSYNTHESIS INHIBITION,, MOLECULAR STRUCTURE STRUCTURE-ACTIVITY, RELATIONSHIP, SYNTHESIS ,TOXICOLOGY, TARGET SPECIFICITY

Record - 470

DIFLUBENZURON INHIBITS CHITIN SYNTHESIS IN CULEX PIPIENS LARVAE

HAJJAR N P

MOSQ NEWS 39 (2). 1979. 381-384.

Full Journal Title: Mosquito News

Language: ENGLISH

ABSTRACT

Diflubenzuron (DFB) inhibits growth and development of *C. pipiens* L. larvae at 4 ppb. With 42 h exposure, a period allowing 2 molts, it causes a dose-dependent reduction in body wt and chitin content, such that at 9 ppb these are only 66 and 27% of control, respectively. There is also a dose-dependent increase in the instar duration and mortality. Following [¹⁴C]glucose feeding, DFB has no effect on the transport of [¹⁴C]glucose and its [¹⁴C] metabolites into the integument of 4th instar larvae, but causes a dose-dependent decrease in their incorporation into the newly-formed chitin.

Descriptors/Keywords: MOLT, MORTALITY, GLUCOSE, CARBON-14

Record - 471

INSECTICIDAL BENZOYLPHENYL UREAS STRUCTURE ACTIVITY RELATIONSHIPS AS CHITIN SYNTHESIS INHIBITORS

HAJJAR N P; CASIDA J E

SCIENCE (WASH D C) 200 (4349). 1978 1499-1500.

Language: ENGLISH

ABSTRACT

The 1-benzoyl-3-phenylurea insecticide diflubenzuron is a potent inhibitor for the conversion of ¹⁴C-labeled glucose to ¹⁴C-labeled chitin in isolated abdomens of newly emerged adult milkweed bugs (*Oncopeltus fasciatus* Dallas). The inhibitory activity of 24 diflubenzuron analogs in this in vitro chitin-synthesizing system is in good agreement with their toxicity to 5th instar nymphs of this species. These insecticides act quickly and directly within the integument to ultimately block the terminal polymerization step in chitin formation.

Descriptors/Keywords: ONCOPELTUS-FASCIATUS, DIFLUBENZURON, CARBON-14, GLUCOSE, ANALOGS ,IN-VITRO, POLYMERIZATION

Record - 472

LABORATORY STUDIES ON THE EFFECTS OF FUNGICIDES ACARICIDES AND INSECTICIDES ON THE ENTOMO PATHOGENIC FUNGUS VERTICILLIUM ECANII

HALL R A

ENTOMOL EXP APPL 29 (1). 1981. 39-48.

Full Journal Title: Entomologia Experimentalis et Applicata

Language: ENGLISH

ABSTRACT

Tests on agar suggested that several fungicides, insecticides and acaricides are recommendable for use with the fungus, *V. lecanii* (Zimm) Viegas; some chemicals, benodanil, oxycarboxin, iprodione, vinclozolin, dinocap, carbaryl, dicofol, dienochlor, pirimicarb, permethrin and white oil are sufficiently innocuous to *V. lecanii* for spraying simultaneously with its spores while separate applications are recommended for diflubenzuron, which is slightly more toxic. Results of tests on aphids with some of the compounds of greater but intermediate toxicity on agar, suggested that separate applications are advisable with bupirimate, pyrazaphos, triforine, cyhexatin, dioxathion and tetradifon, but use of zineb is best avoided. The most toxic compounds on agar were thiram, captan, maneb, mancozeb, chlorothalonil, dichlofluanid, fenarimol, imazalil, BTS 40542, quinomethionate fluotrimazole and diazinon. Of these compounds tested with *V. lecanii* on aphids, captan, chlorothalonil, dichlofluanid, quinomethionate and thiram were incompatible with *V. lecanii* but fenarimol was harmless. Careful selection of pesticides and fungicides permits the combined use of *V. lecanii* and chemicals in integrated control programs.

Descriptors/Keywords: THIRAM, CAPTAN, MANEB, MANCOZEB, CHLOROTHALONIL, DICHLOFLUANID, FENARIMOL, IMAZALIL, BTS-40542, CHLOROTHALONIL, BENODANIL, OXYCARBOXIN, IPRODIONE, VINCLOZOLIN, DINOCAP, CARBARYL, DICOFOL, DIENOCHLOR, PIRIMICARB, PERMETHRIN, WHITE OIL, DIFLUBENZURON, AGAR, TEST, SPORE, BUPIRIMATE, PYRAZAPHOS, TRIFORINE, CYHEXATIN, DIOXATHION, TETRADIFON, ZINEB, CAPTAN, DICHLOFLUANID, QUINOMETHIONATE

Record - 473

CONTROL OF THE PINE PROCESSIONARY CATERPILLAR THAUMETOPOEA WILKINSONI WITH DIFLUBENZURON

HALPERIN J

PHYTOPARASITICA 8 (2). 1980. 83-92.

Full Journal Title: Phyt parasitica

Language: ENGLISH

ABSTRACT

During 1973-1976 trials were carried out to control the pine processionary caterpillar with Dimilin (25% diflubenzuron WP [wetttable powder]), and commercial treatments with this compound in the forest were followed until 1978/1979. Total mortality of the 1st-3rd instar larvae was obtained in 8-16 yr old Aleppo pine plots after an aerial spray of Dimilin at the rate of 300 g (75 g a.i. [active ingredient]) in 50 l water/ha; 500 g (125 g a.i.)/ha was required to kill all 3rd and 4th instar larvae. A ground spray with Dimilin at a concentration of 0.003% (0.00075% a.i.) in water of 6 yr old Aleppo pine trees infested by 1st-3rd instar larvae gave similar results. Dimilin persisted on the sprayed needles in the forest up to 27 days, even after 91 mm of rain.

Descriptors/Keywords: PINE TREE, RAIN, MORTALITY, INSTAR

Record - 474

HAMAKER, T. L. AND E. MATTHEWS. 1980. CHRONIC EFFECTS OF PESTICIDES ON MYSID SHRIMP. TOXICOLOGY RESEARCH PROJECTS DIRECTORY.

Record - 475

PENETRATION OF PESTICIDES INTO THE BULB MITE RHIZOGLYPHUS ECHINOPUS ACARI ACARIDAE

HAMED M S; KNOWLES C O

EXP APPL ACAROL 7 (3). 1989. 201-218.

Full Journal Title: Experimental & Applied Acarology

Language: ENGLISH

ABSTRACT

Bulb mites, *Rhizoglyphus echinopus* (Fumouze and Robin), were exposed for 10 min in vials precoated with 23 radiocarbon-labeled pesticides, and the kinetics of penetration were assessed following post-exposure periods of 320 min or 24 h, depending upon the compound. With all pesticides, penetration was biphasic and consisted of a rapid initial component (alpha phase) followed by a much slower secondary component. The alpha phase of penetration was analyzed with a linear model, and the entire penetration curve was analyzed with a non-linear model. Correlation analyses of ten mass balance and penetration parameters and partition coefficients yielded 14 combinations that were significant at $P < 0.05$. It was found that compounds with the fastest penetration rates had the highest dosing coefficients and the lowest octanol-water partition coefficients. Thus, fastest penetration was associated with relatively polar compounds such as oxythioquinox, promecarb, metomyl, aldicarb, and chlordimeform, whereas slowest penetration was observed with lipophilic compounds such as DDT, diflubenzuron, di-2-ethylhexyl phthalate, and the pyrethroids. However, the polar formetanate hydrochloride penetrated very slowly and was an exception to this generalization. These results provide a basis for suggesting that pesticide penetration proceeded at a faster rate in bulb mites than in two-spotted spider mites, *Tetranychus urticae* Koch, in other studies.

Descriptors/Keywords: TETRANYCHUS-URTICAE, OXYTHIOQUINOX, PROMECARB, METHOMYL, ALDICARB, CHLORDIMEFORM, DDT, DIFLUBENZURON, DI-2-ETHYLHEXYLPHTHALATE, PYRETHROID, PENETRATION, CURVE, MATHEMATICAL MODEL

Record -476

HAMMOND, A. M. 1975. 72 HOURS TOXICITY STUDY WITH TH-6040 ON CRAYFISH; REPORT THOMPSON-HAYWARD CHEMICAL COMPANY. NO. D09207.

Record - 477

ABILITY OF STANDARD TOXICITY TESTS TO PREDICT THE EFFECTS OF THE INSECTICIDE DIFLUBENZURON ON LABORATORY STREAM COMMUNITIES

HANSEN S R; GARTON R R

CAN J FISH AQUAT SCI 39 (9). 1982. 1273-1288.

Full Journal Title: Canadian Journal of Fisheries and Aquatic Sciences

Language: ENGLISH

ABSTRACT

The ability of a standard set of freshwater single-species toxicity tests to predict accurately effects of the insecticide diflubenzuron on complex laboratory stream communities was assessed. The single-species tests complied with requirements prescribed for establishing freshwater quality criteria and included 9 freshwater animal [*Salmo gairdneri*, *Pimephales promelas*, *Lebistes reticulatus*, *Cricotopus* sp., *Tanytarsus dissimilis*, *Hyallela azteca*, *Daphnia magna*, *Juga plicifera*, *Physa* sp.] acute tests, 5 freshwater animal [*S. gairdneri*, *P. promelas*, *D. magna*, *J. plicifera*, *Physa* sp.] chronic tests and 1 freshwater algal [*Selenastrum capricornutum*] test. The stream communities were stocked from a natural source, equilibrated for 3 mo. and then treated with diflubenzuron for 5 mo. Effects on these stream communities were assessed at the functional group level using biomass and diversity for the analysis. The single-species tests adequately predicted the concentrations of diflubenzuron which affected these stream communities; the most-sensitive test species, insects and crustaceans, were up to an order of magnitude more sensitive than the observed community effects. The single-species tests were less successful in predicting the exact nature of the community level effects. Those effects resulting from direct lethality to component species were clearly predicted; indirect effects due to altered interspecies interactions could only be predicted with an a priori knowledge of the system's trophic dynamics.

Descriptors/Keywords: SALMO-GAIRDNERI, PIMEPHALES-PROMELAS, LEBISTES-RETICULATUS, CRICOTOPUS-SP, TANYTARSUS-DISSIMILIS, HYALLELA-AZTECA, DAPHNIA-MAGNA, JUGA-PLICIFERA, PHYSY-SP, SELANASTRUM-CAPRICORNUTUM

Record - 478

HANSEN, S. R. AND R. R. GARTON. 1982 THE EFFECTS OF DIFLUBENZURON ON A COMPLEX LABORATORY STREAM COMMUNITY. ARCH. ENVIRON. CONTAM. TOXICOL. 11(1): 1-10.

Record - 479

EFFECTS OF SELECTED INSECTICIDES AND NEMATOCIDES ON THE IN-VITRO DEVELOPMENT OF THE ENTOMOGENOUS NEMATODE NEOAPLECTANA CARPOCAPSAE

HARA A H; KAYA H K

J NEMATOL 14 (4). 1982. 486-491.

Full Journal Title: Journal of Nematology

Language: ENGLISH

ABSTRACT

The effects of organophosphates (mevinpos, phenamiphos, trichlorfon), carbamates (carbofuran, methomyl, oxamyl), a formamidine (chlordimeform), a synthetic pyrethroid (fenvalerate), a cholinated hydrocarbon (methoxychlor), and an insect growth regulator (diflubenzuron) on in vitro development and reproduction of *N. carpocapsae* were tested by incorporating each chemical into a nematode rearing medium. Organophosphates and carbamates adversely affected development and reproduction at concentrations .gtoreq. 0.1 mg/ml. Phenamiphos was the most toxic, with no nematode reproduction at 0.01 mg/ml. Inoculated infective juveniles developed to adults with some of the organophosphates and carbamates, but limited or no reproduction occurred. Chlordimeform inhibited development at 1.0 mg/ml, while diflubenzuron, fenvalerate and methoxychlor did not significantly ($P > 0.05$) reduce reproduction at 1.0 mg/ml. The organophosphate and carbamate nematocides in use for control of plant-parasitic nematodes may be toxic to *N. carpocapsae* in the soil.

Descriptors/Keywords: ORGANO PHOSPHATE, CARBAMATE, CHLORDIMEFORM, PYRETHROID, DIFLUBENZURON, PLANT PARASITE, CONTROL, SOIL, IN-VITRO

Record - 480

EVALUATION OF DIFLUBENZURON FOR BOLL WEEVIL ANTHONOMUS GRANDIS CONTROL IN THE LOWER RIO-GRANDE VALLEY OF TEXAS USA

HARDING J A; WOLFENBARGER D A

SOUTHWEST ENTOMOL 0 (SUPPL. 1). 1980. 27-30.

Full Journal Title: Southwestern Entomologist

Language: ENGLISH

ABSTRACT

Field experiments were conducted in 1976, 1977 and 1978 to evaluate diflubenzuron (N-[[[(4-chlorophenyl)amino]carbonyl]-2,6-difluorobenzamide, Dimilin, TH-6040) for boll weevil, *A. grandis* Boheman, control. Weevil reduction was shown, but not on a seasonal basis and [cotton] yields were not affected. The predator complex was not adversely affected. No phytotoxicity or fruiting variations of the cotton were recorded due to treatment.

Descriptors/Keywords: COTTON, PREDATOR ,COMPLEX, YIELD, PHYTOTOXICITY

Record - 481

FOREST TENT CATERPILLAR CONTROL WITH AERIALY APPLIED FORMULATIONS OF BACILLUS THURINGIENSIS AND DIMILIN

HARPER J D; ABRAHAMSON L P

J ECON ENTOMOL 72 (1). 1979. 74-77.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Field tests were conducted annually from 1973 through 1976 to determine effectiveness of aerially applied formulations of *B. thuringiensis* Berliner (Dipel and Thuricide) and Dimilin [1-(4-chlorophenyl)-3-(2,6-difluorobenzoyl)-urea] for control of *Malacosoma distria* Huebner that infest water tupelo, *Nyssa aquatica* L., forests in southwestern Alabama [USA]. Heavy larval mortality and prevention of > 20% net foliage loss were obtained on 4.0 and 8.1 ha plots with Dipel WP [wetttable powder] at 8.6 BIU/ha, Dipel LC [liquid concentrate] at 4.8 and 9.6 BIU/ha, Thuricide 16 B at 9.6 BIU/ha, Dimilin W-25 at 34-216 g/ha, and Dimilin 2-F at 34-134 g/ha.

Descriptors/Keywords: MALACOSOMA-DISSTRIA, NYSSA-AQUATICA, 1-4 CHLOROPHENYL-3-2 6-DIFLUOROBENZOYL UREA, FORESTS, LARVAL MORTALITY, ALABAMA USA

Record - 482

HARRASS, M. 1981. DIMILIN USED TO CHALLENGE ARTIFICIAL FRESHWATER AQUATIC ECOSYSTEMS. REPORT THOMPSON-HAYWARD CHEMICAL COMPANY NO. D1-887.

Record - 483

HARRIS, W. G AND M. V. MEISCH. 1974. SUMMARY SHEET: LARGON: 3243.; UNPUBLISHED STUDY RECEIVED JULY 31, 1978 UNDER 148-1259; PREPARED IN COOPERATION WITH UNIV. OF ARK. DEPT. OF ENTOMOL., SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 484

HARTINGER, C. 1976. EFFECT OF THE MOLT INHIBITOR DIMILIN ON LARVAE OF YPONOMEUTA SPP. AND THEIR PARASITES (FRUIT PESTS). ANZ SCHADLINGSKD PFLANZENSCHUTZ UMWELTSCHUTZ. 49(10): 156-158.

Record - 485

HASHIMOTO, Y., AND Y. NISHIUCHI. 1982. EFFECTS OF HERBICIDES ON AQUATIC ANIMALS. IN: PESTICIDE CHEMISTRY: HUMAN WELFARE AND ENVIRONMENT 2:355-358.

Record - 486

ULTRASTRUCTURAL STUDY OF THE PENETRATION BY METARHIZIUM ANISOPLIAE THROUGH DIMILIN-AFFECTED CUTICLE OF MANDUCA SEXTA

HASSAN A E M; CHARNLEY A K

J INVERTEBR PATHOL 54 (1). 1989. 117-124.

Full Journal Title: Journal of Invertebrate Pathology

Language: ENGLISH

ABSTRACT

Fourth instar larvae of the tobacco hornworm, *Manduca sexta*, were inoculated with conidia of *Metarhizium anisopliae* then fed a diet containing the insect chitin synthesis inhibitor Dimilin. Cuticle of Dimilin-treated insects provided reduced resistance to penetration by hyphae of *M. anisopliae*. Widespread histolysis of postecdysial (Dimilin-affected) cuticle occurred. In addition, although lamellate preecdysial cuticle was not affected by Dimilin, the majority of the cuticle in the vertical cuticular columns was laid down at the same time as the postecdysial cuticle. Therefore, the vertical cuticular columns were areas of weakness in the preecdysial cuticle which as a consequence failed to provide a mechanical barrier to the penetrating fungus.

Descriptors/Keywords: CHITIN SYNTHESIS, BIOLOGICAL CONTROL, PESTS, TOBACCO

INDUSTRY

Record - 487

HASSAN, S. A., R. ALBERT, F. BIGLER, P. BLAISINGER, H. BOGENSCHEUTZ, H. BOLLER, J. BRUN, P. CHIVERTON, P. EDWARDS, ET AL. 1987. RESULTS OF THE THIRD JOINT PESTICIDE TESTING PROGRAM BY THE IOBC-WPRS WORKING GROUP PESTICIDES AND BENEFICIAL ORGANISMS. J. APPL. ENTOMOL. 103 (1): 92-107.

Record - 488

THE EFFECT OF DIMILIN ON THE ULTRASTRUCTURE OF THE INTEGUMENT OF MANDUCA SEXTA

HASSAN A E M; CHARNLEY A K

J INSECT PHYSIOL 33 (9). 1987. 669-676.

Full Journal Title: Journal of Insect Physiology

Language: ENGLISH

ABSTRACT

The insecticide Dimilin was fed to larvae of the tobacco hornworm, *Manduca sexta*, throughout the 4th stadium. The effects were observed on the ultrastructure of the 4th-instar integument. Although post-ecdysial abdominal cuticle was laid down to the same extent in both experimental and control insects, the fine structure of the integument was very different after the two treatments. In particular the post-ecdysial cuticle of Dimilin-treated insects was granular in appearance and devoid of lamellae and the epidermal cells extruded cytoplasm apically. New 5th-instar cuticle was produced on time in experimental insects but the procuticle was again granular and non-lamellate.

Descriptors/Keywords: LARVAE, INSECTICIDE, CYTOPLASMIC EXTRUSION, LAMELLAR LOSS

Record - 489

HASSAN, S. A. 1977. STANDARDIZATION TECHNIQUES FOR TESTING SIDE EFFECTS OF PESTICIDES ON BENEFICIAL ARTHROPODS IN THE LABORATORY. Z. PFLANZENKR. PFLANZENSCHUTZ. 84(3): 158-163.

Record - 490

LABORATORY EVALUATION OF 2-1 METHYL-2-4-PHENOXYPHENOXYETHOXYPYRIDINE AGAINST LARVAE OF MOSQUITOES AND HOUSEFLY

HATAKOSHI M; KAWADA H; NISHIDA S; KISIDA H; NAKAYAMA I

JPN J SANIT ZOOL 38 (4). 1987. 271-274.

Full Journal Title: Japanese Journal of Sanitary Zoology

Language: ENGLISH

ABSTRACT

A newly synthesized juvenile hormone active compound, S-31183 (2-[1-methyl-2-(4-phenoxyphenoxy)ethoxy]pyridine) was evaluated for its inhibition of emergence of adult *Culex pipiens pallens*, *Anopheles stephensi*, *Aedes aegypti* and *Musca domestica* in the laboratory. It was more active than methoprene, diflubenzuron, or temephos against last instar larvae of *Cx. p. pallens*, *An. stephensi* and *Ae. aegypti*. S-31183 was more active than methoprene and diflubenzuron against 4-day-old larvae of *M. domestica* in the artificial medium, and more active than methoprene against eggs and 4-day-old larvae of *M. domestica* in the chicken manure medium.

Descriptors/Keywords: CULEX-PIPIENS-PALLENS, ANOPHELES-STEPHENSII, AEDES-AEGYPTI, MUSCA-DOMESTICA, CHICKEN PEST, JUVENILE HORMONE MIMIC, EMERGENCE, EFFICACY, METHOPRENE, DIFLUBENZURON TEMEPHOS

Record - 491

EFFICACY OF PESTICIDES ON THE WESTERN SPOTTED TENTIFORM LEAFMINER
PHYLLONORYCTER ELMAELLA LEPIDOPTERA GRACILLARIIDAE IN THE PACIFIC NORTHWEST USA

HATHAWAY D O; MAYER D F; LUNDEN J D

J ENTOMOL SOC B C 82 (0). 1985. 7-11.

Full Journal Title: Journal of the Entomological Society of British Columbia

Language: ENGLISH

ABSTRACT

A serious infestation of the western spotted tentiform leafminer, *Phyllonorycter elmaella* Doganlar and Mutuura, was discovered in a commercial apple orchard in southeastern Washington in 1980. By 1983, the insect was found in many orchards in Washington, northern Oregon, and parts of Idaho on the foliage of apple, cherry, pear, and prune trees. A number of insecticides were tested against the leafminer in the Kennewick, Pasco, Prosser, and Moxee areas of Washington during 1983 and 1984. In one orchard, early season control was best with oxamyl, permethrin, cypermethrin and diflubenzuron. In another orchard, oxamyl, endosulfan at pink stage, and endosulfan-methoxychlor mix applied in mid-June and fenvalerate applied in April were all highly effective in controlling leaf-miners. Diflubenzuron, permethrin, chlorpyrifos, and FMC 54800, all controlled leafminers. Aldicarb, a systemic insecticide, provided good control. Efficacy tests show that with proper timing, many materials effectively reduce leafminer populations.

Descriptors/Keywords: APPLE, CHERRY, PEAR, PRUNE, OXAMYL, PERMETHRIN, CYPERMETHRIN, DIFLUBENZURON, ENDOSULFAN, FENVALERATE, ALDICARB, SEASONALITY

Record - 492

HATZIOS, K. K. AND D. PENNER. 1979. EFFECT OF DIFLUBENZURON ON COTTON SEED VIABILITY AND VIGOR. J. OF SEED TECH. 4(1): 12-17.

Record -493

THE EFFECT OF DIFLUBENZURON 1-4 CHLOROPHENYL-3-2 6-DIFLUOROBENZOYL UREA ON SOYBEAN GLYCINE-MAX PHOTOSYNTHESIS RESPIRATION AND LEAF ULTRASTRUCTURE
HATZIOS K K; PENNER D

PESTIC BIOCHEM PHYSIOL 9 (1). 1978 65-69.

Full Journal Title: Pesticide Biochemistry and Physiology

Language: ENGLISH

ABSTRACT

The effect of the insecticide diflubenzuron [1-(4-chlorophenyl)-3-(2,6-difluorobenzoyl)urea] on photosynthesis, respiration and leaf ultrastructure of G. max cv. Swift was examined on plants treated at the 2nd trifoliate leaf stage with 0, 0.067 and 0.269 kg of active ingredient/ha of diflubenzuron. Photosynthesis and respiration were measured with an IR CO₂ analyzer in an open flow system prior to diflubenzuron application and at 4, 24, 48 and 96 h after treatment with diflubenzuron. Diflubenzuron had no effect on soybean photosynthesis at any rate examined. Respiration was stimulated by the high rate (0.269 kg/ha) in a transitory manner. Tissue samples removed from both old and new leaves, 9 days after diflubenzuron application, were used for the ultrastructure study with the transmission electron microscope. The lower trifoliate leaves contained more starch grains than the upper ones being formed after treatment, but no aberrations or degradation of leaf ultrastructure due to diflubenzuron treatment were evident.

Descriptors/Keywords: INSECTICIDE, STARCH, GRANULES, TRANSMISSION, ELECTRON MICROSCOPY

Record - 494

HAVERFIELD, L. 1978. APPLICATION OF DIMILIN TO SHALLOW WATER IN A PASTURE FOR CONTROL OF MOSQUITOES, WATERFLEAS, DAMSEL FLIES AND FERRY SHRIMPS. REPORT THOMPSON-HAYWARD CHEMICAL COMPANY NO. DI-3059.

Record - 495

OVICIDAL ACTIVITY OF INSECTICIDES ON THE SPOTTED TENTIFORM LEAFMINER
PHYLLONORYCTER BLANCARDELLA LEPIDOPTERA GRACILLARIIDAE

HAYDEN J P; HOWITT A J

J ECON ENTOMOL 79 (1). 1986. 258-260.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Several insecticides were tested for ovicidal activity on spotted tentiform leafminer (STLM), *Phyllonorycter blancardella* (F.). In one laboratory experiment, fenvalerate and methomyl caused 88 and 72% egg mortality, respectively, whereas endosulfan was less effective (29.6% egg mortality). The control (water) had the lowest egg mortality (8%). In a second laboratory experiment, fenvalerate, permethrin, and methomyl caused 92, 92, and 77% egg mortality, respectively, whereas the control showed low egg mortality (13%). In field applications [apples, Michigan, USA] fenvalerate and diflubenzuron were effective ovicides (100 and 70.7% egg mortality, respectively). Single-tree applications of fenvalerate and diflubenzuron showed both treatments to be ovicidal at low rates. Insecticides targeted at the egg stage and applied before hatch add a new dimension to STLM management.

Descriptors/Keywords: APPLE, FRUITS, FENVALERATE, METHOMYL, DIFLUBENZURON, INSECT GROWTH REGULATOR, MICHIGAN USA

Record - 496

BOLL WEEVIL COLEOPTERA CURCULIONIDAE MORTALITY AS AFFECTED BY FEEDING
THREE DIETS BEFORE SEXUAL STERILIZATION

HAYNES J W

J AGRIC ENTOMOL 6 (3). 1989. 193-199.

Full Journal Title: Journal of Agricultural Entomology

Language: ENGLISH

ABSTRACT

Boll weevils, *Anthonomus grandis grandis* Boheman, were fed a standard adult diet, a modified standard diet containing 10% sucrose plus antibiotics, or squares for 0, 1, 2, or 3 days before treatment consisting of a diflubenzuron dip followed by gamma irradiation. By 3 days following treatment, weevils fed the modified diet for 2-3 days had significantly less mortality than weevils fed the other two diets. By 6 days after treatment, males preferred the modified diet for 2-3 days or females preferred the modified diet for 3 days resulted in less mortality than weevils fed the standard diet. Mortality after 10 days was excessive in all treatments

Descriptors/Keywords: ANTHONOMUS-GRANDIS-GRANDIS, SUCROSE, ANTIBIOTICS, DIFLUBENZURON, GAMMA IRRADIATION, MORTALITY

Record - 497

EVALUATION OF A NEW METHOD FOR STERILIZING BOLL WEEVILS COLEOPTERA
CURCULIONIDAE BY DIPPING IN A DIFLUBENZURON SUSPENSION FOLLOWED BY

IRRADIATION

HAYNES J W; SMITH J W

J ECON ENTOMOL 82 (1). 1989. 64-68.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Boll weevils, *Anthonomus grandis grandis* Boheman, were sterilized by dipping in an aqueous suspension containing 0.4% (AI) diflubenzuron and antibiotics (0.03% kanamycin, 0.015% penicillin, and 0.015% chloramphenicol) for 10 min followed by 10 krad of irradiation. Overall, mortality was .ltoreq. 16.6% after 5 d; by 7 d, male mortality was .ltoreq. 59.5%. Treated males were 77-79% as attractive as untreated males to untreated females. Flight activity of treated weevils was 45-56% of that observed in the control. In competitive mating studies, numbers of females mated by untreated males were significantly greater than treated males at a ratio of 1:1. When treated males outnumbered untreated males by more than 5:1, the number of matings to untreated females was significantly higher. A 20:1 ratio of treated males to untreated males was required to significantly reduce F1 adult emergence. Sterility, mortality, and vigor were increased with this new method compared with the previous method that involved feeding diflubenzuron (100 ppm) for 5 d followed by 10 krad of irradiation.

Descriptors/Keywords: ANTHONOMUS-GRANDIS-GRANDIS, ANTIBIOTICS, MORTALITY, FLIGHT ATTRACTIVITY, STERILITY, VIGOR, PESTS, PEST CONTROL, BIOLOGICAL CONTROL

Record - 498

WATER CONTENT OF STERILE AND NON-STERILE BOLL WEEVILS AS INFLUENCED BY FEEDING INCREASED LEVELS OF SUCROSE OR COTTON SQUARES

HAYNES J W

J ENTOMOL SCI 23 (2). 1988. 155-160.

Full Journal Title: Journal of Entomological Science

Language: ENGLISH

ABSTRACT

Boll weevils, *Anthonomus grandis* Boheman were fed an artificial diet containing 100 ppm of diflubenzuron and either 2.5 or 10% sucrose for five days prior to an irradiation dose of 10 krad on day six. After the feeding plus irradiation treatment, the weevils were given cotton squares or artificial diet posttreatment. Treated weevils contained significantly higher levels of water than the control samples for five days posttreatment. In comparisons between the four treatments, feeding squares for the first two days posttreatment resulted in significantly higher water content in half the treatments. Similarly, when comparisons were made between the four controls it was also found that feeding squares resulted in more water in two groups tested. Sugar concentration did not influence water content in boll weevils.

Descriptors/Keywords: ANTHONOMUS-GRANDIS, DIET, DIFLUBENZURON, IRRADIATION TREATMENT

Record - 499

LOCOMOTOR ACTIVITY OF STERILE BOLL WEEVILS ANTHONOMUS GRANDIS GRANDIS COLEOPTERA CURCULIONIDAE AS INFLUENCED BY FEEDING SUCROSE OR COTTON SQUARES

HAYNES J W

J ECON ENTOMOL 79 (5). 1986. 1188-1191.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Adult boll weevils, *Anthonomus grandis grandis* Boheman. were fed 100 ppm of diflubenzuron in their

diet for 6 days, then exposed to 10 krad of acute irradiation. During that time, treated as well as control weevils were fed 2.5 or 10% sugar in the diet. After treatment, all weevils were fed cotton squares or diet plugs for 5 days. Both 2.5% sucrose-treated and control boll weevils fed cotton squares had higher locomotor activity for 3-4 of the 5 days tested. Treated and control weevils fed 10% sucrose during the treatment period followed by squares rather than diet plugs had significantly higher locomotor activity for 2 of the 5 days tested. Treated or control weevils fed 2.5% sucrose during treatment followed by squares after treatment had much higher responses than when they received diet plugs after treatment. Concentration of sugar in the diet during treatment did not affect locomotor activity for 4 of the 5 days tested where posttreatment diets were the same. Peaks of activity occurred at 2- to 4-h intervals each day.

Descriptors/Keywords: IRRADIATION, DIFLUBENZURON, CHEMOSTERILANT, COMPETITIVENESS, STERILE INSECT, TECHNIQUE

Record - 500

STERILE BOLL WEEVILS ANTHONOMUS GRANDIS GRANDIS COLEOPTERA CURCULIONIDAE FED 10 PERCENT SUGAR DIETS EFFECT ON LONGEVITY MATING AND FLIGHT

HAYNES J

J ECON ENTOMOL 78 (4). 1985. 783-786. .

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Adult *Anthonomus grandis grandis* Boheman were sterilized when fed an adult diet containing 100 ppm of diflubenzuron for 5 days followed by 10 krad of acute irradiation on day 6. The diet also contained either 10% sucrose, 10% maltose, or 2.5% sucrose diet (wt/wt) as a standard comparison. Mortality of treated (T) males and females fed 10% sucrose was significantly lower than T weevils fed the standard 2.5% sucrose diet for the first 4 days after treatment. Treated males fed 10% maltose also had significantly less mortality for 4 days compared with males fed the standard sucrose diet. For the first 4 days after treatment, sperm transfer of T males fed the 10% maltose diet was significantly higher than those fed the 2.5% sucrose diet. Sperm transfer of T males fed 10% sucrose was significantly higher for 2 days after treatment compared with T males fed the 2.5% sucrose diet. Treated males fed 10% maltose flew significantly more at day 1 after treatment than T males fed the other two sugar diets. Increased sugar in the diet had no overall effect in increasing male attractiveness to virgin females.

Descriptors/Keywords: SUCROSE, MALTOSE, SPERM TRANSFER, COMPETITIVENESS, DIFLUBENZURON, CHEMOSTERILANT, IRRADIATION, STERILE INSECT TECHNIQUE

Record - 501

COMPETITIVENESS OF DIFLUBENZURON AND IRRADIATION TREATED VS. UNTREATED BOLL WEEVILS ANTHONOMUS GRANDIS IN ALTERNATE MATING SEQUENCES

HAYNES J W; WRIGHT J E

SOUTHWEST ENTOMOL 9 (3). 1984. 263-266.

Full Journal Title: Southwestern Entomologist

Language: ENGLISH

ABSTRACT

Male boll weevils, *A. grandis* Boheman, were sexually sterilized by feeding them 100 ppm of diflubenzuron in the adult diet for 5 days followed by 10 krad of irradiation on day 6. Six day old virgin females were alternately mated with treated or untreated males. The 2nd mating was the most effective in influencing egg hatch of females following the initial treated male mating than when the sequence was reversed. Sperm from the last mating (24 h apart) regardless of sequence, fertilized

most of the eggs subsequently laid. Treated males were 63.6% as competitive as untreated males in the number of matings made during the test. Sperm from treated male matings were .apprx. 50% as competitive as sperm from untreated males.

Record - 502

EFFECT OF DIFLUBENZURON PLUS IRRADIATION TREATMENT ON MALE BOLL WEEVIL
ANTHONOMUS GRANDIS GRANDIS FLIGHT

HAYNES J W; WRIGHT J E

J AGRIC ENTOMOL 1 (3). 1984. 181-184.

Full Journal Title: Journal of Agricultural Entomology

Language: ENGLISH

ABSTRACT

Three days after treatment (diflubenzuron + irradiation) the percent flight of sterilized male boll weevils, *A. grandis grandis* Boheman, was 48.6% that of the untreated males. For the next 2 days flight activity of the treated males dropped to 22.8% of that of the untreated males.

Descriptors/Keywords: STERILE INSECT TECHNIQUE, CHEMOSTERILANT

Record - 503

THE EFFECT OF DIFLUBENZURON ON MATING IN BOLL WEEVILS ANTHONOMUS GRANDIS
GRANDIS

HAYNES J W; WRIGHT J E

J AGRIC ENTOMOL 1 (4). 1984. 345-348.

Full Journal Title: Journal of Agricultural Entomology

Language: ENGLISH

ABSTRACT

Feedings boll weevils, *A. g. grandis* Boheman, a 5 ppm diflubenzuron diet for 5 days did not reduce significantly mating of the males for the 1st wk after treatment. Development of progeny from treated females mated with untreated males was reduced to about half that of the control. Concentrations of 10, 50, 100, 200, 500, or 1000 ppm of diflubenzuron significantly reduced the number of matings by an average of 30% over the control; development of progeny to the adult stage was reduced an average of 80% as compared with the control.

Descriptors/Keywords: CHEMOSTERILANT, INSECT GROWTH REGULATOR

Record - 504

TECHNIQUE FOR MEASURING FEMALE ATTRACTIVENESS TO STERILE MALE BOLL
WEEVILS ANTHONOMUS GRANDIS COLEOPTERA CURCULIONIDAE

HAYNES J W

J ECON ENTOMOL 76 (4). 1983. 966-968.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

A device, consisting of two 5-cm cube boxes with screen tops and cone-shaped screens opening into the inside, was used to measure the attractiveness of the male *A. grandis* Boheman contained inside the 5-cm cube boxes in a screen-covered bottle cap above the screen cone opening. The small boxes were placed inside enclosed cube boxes in a screen-covered bottle cap above the screen cone opening. The small boxes were placed inside an enclosed plastic box (26 by 35 by 8 cm) provided with a top to contain the loose females. Tests were run for 24 h. Sterile males used in some of the tests had been fed for 5 days on an artificial diet containing diflubenzuron at 100 ppm, followed by a 10-krad acute dose in a ¹³⁷Cs irradiator. When sterile males were tested against normal males for female responsiveness,

the normal males were 1.6 times more attractive for the 1st 5 days after treatment.

Descriptors/Keywords: COMPETITIVENESS, METHOD, DIFLUBENZURON, ARTIFICIAL DIET, CHEMO STERILANT IRRADIATION

Record - 505

HAYNES, J. W. AND J. E. WRIGHT. 1983. THE EFFECT OF DIFLUBENZURON ON AGED FEMALE BOLL WEEVILS (CHEMOSTERILANTS, COTTON PESTS, CONTROL). RESEARCH REPORT- MISSISSIPPI AG. & FORESTRY EXP. STA. 8 (14) 3 PAGES.

Record - 506

STERILIZATION OF BOLL WEEVILS ANTHONOMUS GRANDIS WITH COMBINED CHEMO STERILANT AND IRRADIATION TREATMENTS

HAYNES J W; WRIGHT J E

SOUTHWEST ENTOMOL 7 (1). 1982. 56-59.

Full Journal Title: Southwestern Entomologist

Language: ENGLISH

ABSTRACT

A 5 day feeding of adult boll weevils, *A. grandis* Boheman, on treated diet containing 0.08% busulfan, 0.4% hempa and 0.1% diflubenzuron followed by a 2 krad acute dose of irradiation sterilized 90-95% of the males and 97-100% of the females; .apprx. 50% were dead after 30 days. Acute irradiation with 2.75 krads following the feeding treatment resulted in 100% sterility of both sexes and mortality of the weevils at 1, 2 and 3 wk posttreatment averaged 26, 70 and 90% respectively.

Descriptors/Keywords: BUSULFAN, HEMPA, DIFLUBENZURON, MORTALITY

Record - 507

LABORATORY COMPETITIVENESS OF STERILIZED BOLL WEEVILS ANTHONOMUS GRANDIS

HAYNES J W; WRIGHT J E

J GA ENTOMOL SOC 17 (3). 1982. 382-388.

Full Journal Title: Journal of the Georgia Entomological Society

Language: ENGLISH

ABSTRACT

Male boll weevils (*A. grandis* Boheman) were sterilized by feeding adult diet pellets, containing 100 ppm of diflubenzuron for 5 days; and then given a 10-krad acute dose of .gamma. irradiation on the 6th day. In tests where 1, 5, 10, 20 or 40 sterile males were allowed to compete with 1 normal male for 1 normal virgin female, 40 sterile males were needed to reduce egg hatch to 2%, and according to Fried's formula the competitiveness value for laboratory tested weevils was 73%.

Descriptors/Keywords: DIFLUBENZURON, FRIEDS FORMULA

Record - 508

EFFECTS OF SOIL TEMPERATURES AND CHILLING ON FLIGHT AND MORTALITY OF STERILE BOLL WEEVILS ANTHONOMUS GRANDIS

HAYNES J W

J GA ENTOMOL SOC 16 (2). 1981. 254-257.

Full Journal Title: Journal of the Georgia Entomological Society

Language: ENGLISH

ABSTRACT

Weevils fed 100 ppm of diflubenzuron diet for 6 days + 10 Krads of acute irradiation were released

(chilled or unchilled) on clay soil surfaces heated as high as 75.degree. C or on sand surfaces heated as high as 52.degree. C. In these laboratory tests (simulating weevil releases from a chilled dispenser in an airplane into a hot cotton field) only 2% of the weevils survived for 2 min at temperatures of 60.degree. C or more. At 49.degree. C or higher, survival on sand surfaces was < 15%. A sandy surface reduced flight to about 1/2 that of a clay soil surface when weevils were released at 30-33.degree. C. Chilling weevils prior to testing and/or increasing soil temperatures reduced flight considerably.

Descriptors/Keywords: COTTON, AIRPLANE, DIFLUBENZURON, DIET, IRRADIATION, SAND, CLAY

Record - 509

DIFLUBENZURON SOLVENT WATER SUSPENSION DIP FOR BOLL WEEVILS ANTHONOMUS GRANDIS EFFECTS MEASURED BY FLIGHT STERILITY AND SPERM TRANSFER

HAYNES J W; MCGOVERN W L; WRIGHT J E

BOLL WEEVIL RES. LAB., AGRICULTURAL RES., SCI. AND EDUCATION
ADMINISTRATION, U.S. DEP. OF AGRICULTURE, MISSISSIPPI STATE, MISSISSIPPI 39762.
ENVIRON ENTOMOL 10 (4). 1981. 492-495.

Full Journal Title: Environmental Entomology

Language: ENGLISH

ABSTRACT

Previously, boll weevils, *A. grandis* Boheman, were dipped in chemosterilant solutions using 100% methanol, ethanol or acetone. It was suspected that pure solvents may often have adverse effects. Boll weevils at 5 or 6 days of age, dipped in 75-100% methanol, ethanol or acetone, had significantly reduced flight activity. Boll weevils dipped in 25% suspensions of methanol, ethanol or acetone containing 0.025% diflubenzuron and then irradiated had acceptable flight activity, mortality and sperm transfer, but the females were not adequately sterilized. Male weevils dipped in 50% methanol or ethanol suspensions containing 0.05% diflubenzuron + 10 krad of irradiation had normal flight for 4 days, were adequately sterilized and transferred sperm to more females 7 days after treatment than males dipped in acetone.

Descriptors/Keywords: CHEMO STERILANT RADIATION

Record - 510

DIFLUBENZURON FEEDING PLUS X IRRADIATION OF BOLL WEEVILS EFFECTS OF DOSE RATE ON STERILITY AND SURVIVAL

HAYNES J W; WRIGHT J E

J GA ENTOMOL SOC 16 (3). 1981. 376-385.

Full Journal Title: Journal of the Georgia Entomological Society

Language: ENGLISH

ABSTRACT

Boll weevils fed a 6 day diet containing 100 ppm of diflubenzuron followed by 7 or 10 krad of X-rays produced < 1% adult progeny when outcrossed to normal weevils. Increased dose rate in 10 krad treatments of X-rays only, resulted in less fecundity of treated females when they were mated with normal males.

Record - 511

HAYNES, J. W., J. E WRIGHT, AND E. MATTIX. 1981. A DIFLUBENZURON DUST METHOD OF STERILIZING FEMALE BOLL WEEVILS (COLEOPTERA: CURCULIONIDAE) ANTHONOMUS GRANDIS; RESEARCH REPORT: MISSISSIPPI AG. & FORESTRY EXP. STA. 6 (4) 4 PAGES.

Record - 512

THE EFFECT OF DIFLUBENZURON PLUS BUSULFAN OR APHOLATE ON THE MASS REARED EBONY STRAIN OF BOLL WEEVILS

HAYNES J W

J GA ENTOMOL SOC 13 (3). 1978 256-260.

Full Journal Title: Journal of the Georgia Entomological Society

Language: ENGLISH

ABSTRACT

When female *Anthonomus grandis* Boheman from a mass reared ebony strain were dipped 4 times in 0.4% diflubenzuron and mated with untreated males the F1 adult emergence was only 3%. Weevils fed 0.1% busulfan treated diet for 4 days or in combination with 0.4% diflubenzuron resulted in 7-11% adult emergence. Two dips of 0.4% diflubenzuron plus 2 dips of 2.5% apholate reduced adult emergence to 5% in treated males with untreated females.

Descriptors/Keywords: ANTHONOMUS-GRANDIS, DIPPED, ADULT EMERGENCE, MALES, FEMALES, TREATED DIET

Record -513

HAZELEUR, W. C. 1975. DIMILIN 25-W TRAILS FOR CONTROL OF CULEX PEUS, CULEX PIPIENS, CULEX TARSALIS, AEDES VEXANS, A. MELANIMEN, A. NIGRONACULIS, AND ANOPHELES FRANCISCANUS MOSQUITOES: REPORT THOMPSON-HAYWARD CHEMICAL COMPANY NO. C3814-2794.

Record - 514

HAZELTINE, W. E. 1975. DIMILIN 25-W FOR CONTROL OF A. NIGRONACULIS MOSQUITOES; REPORT THOMPSON-HAYWARD CHEMICAL COMPANY NO. C3747 DE-2793.

Record - 515

THE ULTRASTRUCTURE OF MUSCLE ATTACHMENT IN LARVAE OF SPODOPTERA LITTORALIS WITH SPECIAL REFERENCE TO DIFLUBENZURON TREATMENT

HEGAZY G; DEGHEELE D

INTERNATIONAL SYMPOSIUM ON CROP PROTECTION. MEDED FAC LANDBOUWWET RIJSUNIV GENT 55 (2 PART B). 1990. 609-620.

Language: ENGLISH

Document Type: CONFERENCE PAPER

ABSTRACT

Descriptors/Keywords: CUTICLE, DIGESTION, TONOFIBRILLAE

Record - 516

DIFLUBENZURON TOXICITY EFFECT ON THE CUTICLE ULTRASTRUCTURE AND CHITIN AND PROTEIN CONTENT OF THE COLORADO POTATO BEETLE LEPTINOTARSA DECEMLINEATA SAY COLEOPTERA CHRYSOMELIDAE

HEGAZY G; DE COCK A; AUDA M; DEGHEELE D

MEDED FAC LANDBOUWWET RIJSUNIV GENT 54 (1). 1989. 89-102.

Full Journal Title: Mededelingen van de Faculteit Landbouwwetenschappen Rijksuniversiteit Gent

Language: ENGLISH

ABSTRACT

Diflubenzuron was evaluated under laboratory conditions for its efficacy against larvae of *Leptinotarsa*

decemlineata (Say). LC50 values showed no appreciable differences between the four instars. Ultrastructure of the cuticle as well as chitin and protein contents were examined after treatment with 50 ppm (LC50) diflubenzuron. Fine structure of the cuticle of the 1st instar larvae showed that the procuticle lamellae, laid down during the first 40 h, were thinner; moreover no lamellar appearance was observed in the pre-ecdysial cuticle at 70 h. Microvilli were also irregular and epidermal cells contained vacuoles. Diflubenzuron inhibited the chitin and protein growth in 4th instar larvae. The inhibition rate of the cuticle chitin and protein reached 35 and 14% at the first day and increased to 63 and 39% at the seventh day. This resulted in a lower weight of the affected cuticle. Electrophoresis indicated that the inhibition did not change the number of cuticular protein bands: 18 bands were observed in treated as well as in untreated 4th instar larvae.

Descriptors/Keywords: INSECTICIDE, FIRST INSTAR, LARVA

Record - 517

HEGAZY, G. M. VAN DE, VEIRE, AND D. DEGHEELE. 1980. EFFECT OF THE CHITIN SYNTHESIS INHIBITOR DIFLUBENZURON ON THE SIXTH AND SEVENTH INSTAR OF GALLERIA MELLONELLA L.: IMPORTANCE OF APPLICATION TIME. MEDEDELINGEN VAN DE FACULTEIT LANDBOUWWETENSCHAPPEN RIJKSUNIVERSITEIT. 45(3): 453-464.

Record - 518

INCIDENCE OF NATURAL CONTROL AGENTS OF THE VELVETBEAN CATERPILLAR ANTICARSIA GEMMATALIS AND RESPONSE OF ITS PREDATORS TO INSECTICIDE TREATMENTS IN BRAZILIAN SOYBEAN GLYCINE-MAX FIELDS

HEINRICHS E A; GASTAL H A D O; GALILEO M H M

PESQUI AGROPECU BRAS 14 (1). 1979. 79-88.

Full Journal Title: Pesquisa Agropecuaria Brasileira

Language: ENGLISH

ABSTRACT

Larvae of the velvetbean caterpillar *A. gemmatilis* Hubner were collected from soybean [*G. max* (L.) Merrill] to determine their population levels and percentage of infection by the fungus, *Nomuraea rileyi* (Farlow) Samson. Seasonal population levels of larvae and adults of the carabid predator, *Calosoma argentatus granulatum* (Perty) were determined by pitfall trap collections. The relationship between resurgence of *Anticarsia* and populations of *Calosoma*, geocorids and nabids as influenced by insecticides was studied. Fungus attack began in Feb. during the pod development stage when the 3rd generation of *Anticarsia* larvae were reaching a peak and 100% of larvae observed on foliage were infected 3 wk later. Activity of *Calosoma* coincided closely with population levels of the 3rd generation of *Anticarsia*. Geocorid and nabid populations were severely affected by monocrotophos and methyl parathion treatments; diflubenzuron, a chitin inhibitor, had no apparent deleterious effect.

Descriptors/Keywords: NOMURAEA-RILEYI, CALOSOMA-ARGENTATUS-GRANULATUM, GEOCORID, NABID, PITFALL TRAP, INSECTICIDE, MONOCROTOPHOS, METHYL PARATHION, DIFLUBENZURON

Record - 519

HELLING, C. S. 1975. SOIL MOBILITY OF THREE THOMPSON-HAYWARD PESTICIDES; INTERIM REPORT ARS-USDA, BELTSVILLE, USA DI-4316.

Record - 520

HENDERSEN, C., H. D. SMITH, C. D JORGENSEN. 1979. SMALL MAMMAL RESPONSES TO EXPERIMENTS; PESTICIDE APPLICATIONS IN CONIFEROUS FOREST. FINAL REPORT USDA DOUGLAS-FIR TUSSOCK MOTH R&D PROGRAM MTM-151.

Record - 521

EFFICACY OF DIFLUBENZURON IN SIMULATED HOUSEHOLD AND YARD CONDITIONS AGAINST THE CAT FLEA CTENOCEPHALIDES FELIS BOUCHE SIPHONAPTERA PULICIDAE

HENDERSON G; FOIL L D

J MED ENTOMOL 30 (3). 1993. 619-621.

Full Journal Title: Journal of Medical Entomology

ABSTRACT

Diflubenzuron-treated carpet inhibited egg-to-adult development of the cat flea for up to 12 mo even with weekly vacuuming of the carpet. The efficacy of diflubenzuron was similar in treated soils over a 6-mo test period except in the case of treated soil that remained outside. Reduced efficacy is attributed to degradation of diflubenzuron by microorganisms and water.

Descriptors/Keywords: CAT PEST, HUMAN PEST, CARPET, SOIL, INTEGRATED PEST MANAGEMENT, INSECTICIDE, EGG-TO-ADULT DEVELOPMENT, INHIBITION

Record - 522

EFFECT ON THE EGG HATCH OF WHITE FRINGED WEEVIL GRAPHOGNATHUS LEUCOLOMA OF FEEDING LUCERNE MEDICAGO SATIVA TREATED WITH THE INSECT GROWTH REGULATOR DIFLUBENZURON

HENZELL R F; LAUREN D R; EAST R

N Z J AGRIC RES 22 (1). 1979. 197-200.

Full Journal Title: New Zealand Journal of Agricultural Research

Language: ENGLISH

ABSTRACT

Eggs from white-fringed weevil (*G. leucoloma*) adults fed in the laboratory on lucerne (*M. sativa* L. cv. Wairau) sprayed in field with diflubenzuron showed reduced hatch compared with eggs from weevils fed on untreated lucerne. One 20 g/ha spray reduced egg hatch by 65% and 1 spray at 50 or 100 g/ha or weekly sprays at 20, 50 or 100 g/ha gave approximately 95% egg hatch reduction. All treatments delayed viable egg hatching. Field trials with adults caged on lucerne sprayed 7 times at weekly intervals, at 20, 50 or 100 g/ha, resulted in at least 96% reduction in the subsequent larval population.

Descriptors/Keywords: CULTIVAR WAIRAU

Record - 523

HENZELL, R. F. D. R. LAUREN, AND W. T. HALL. 1976. LABORATORY TESTS WITH THE INSECT GROWTH REGULATOR, DIFLUBENZURON, AGAINST WHITE-FINGED WEEVIL GRAPHOGNATHUS LEUCOLONIA ADULTS AND ARMY CATERPILLAR PSEUDALETIA SEPARATA LARVAE. PROC. N. Z. WEED PEST CONTROL CONF. 29TH: PP 143-146.

Record - 524

A NEW SCOUTING TECHNIQUE FOR SAMPLING BOLL WEEVIL ANTHONOMUS GRANDIS REPRODUCTION FOLLOWING THE USE OF INSECT GROWTH REGULATORS

HERZOG G A; LAMBERT W R

SOUTHWEST ENTOMOL SUPPL 0 (6). 1984. 27-32.

Full Journal Title: Southwestern Entomologist Supplement

Language: ENGLISH

ABSTRACT

A new scouting technique was developed to monitor the efficacy of the sterility-inducing chitin synthesis inhibitor diflubenzuron on boll weevil, *Anthonomus grandis* Boheman, populations infesting cotton. By counting the number of one-third grown or larger squares that flared or fell from the plants as a result of weevil oviposition, and by monitoring the fruiting load of the plants, an estimate of the matter of developing weevil larvae per acre may be obtained.

Descriptors/Keywords: COTTON, DIFLUBENZURON, CHITIN SYNTHESIS, STERILITY, FRUITING LOAD

Record - 525

HESTER, P. G., M. A. OLSON, AND T. G. FLOOR. 1986. EFFECTS OF DIFLUBENZURON ON THREE ESTUARINE DECAPODS, CALLINECTES SP., PALAEEMONETES PUGIO AND UCA PUGILATO. J. OF THE FLORIDA ANTI-MOSQUITO ASSOC. 57:8-14.

Record - 526

HESTER, P. 1982. EFFICACY OF DIFLUBENZURON [SIC] ON THREE ESTUARINE DECAPODS (CALLINECTES SP., PALAEEMONETES PUGIO, AND UCA SP.): [INCLUDES THE CONTINUATION OF STUDY STARTED OCT. 1982]. UNPUBLISHED STUDY PREPARED BY DUPHAR B.V. 15P. DI-4547.

Record - 527

MANAGEMENT OF THE PECAN SERPENTINE LEAFMINER STIGMELLA JUGLANDIFOLIELLA
LEPIDOPTERA NEPTICULIDAE

HEYERDAHL R; DUTCHER J D

J ECON ENTOMOL 78 (5). 1985. 1121-1124.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

The pecan serpentine leafminer, *Stigmella juglandifoliella* (Clemens), found on pecan in Georgia [USA] has a single life stage dominant in a commercial orchard at any given time. Sampling larvae and determining the time when pupation occurred was an effective forecasting tool for peak adult emergence. Single applications of carbaryl, dimethoate, diflubenzuron, or fenvalerate, timed to coincide with peak adult emergence, effectively controlled the following leafminer generation. However, carbaryl did not maintain a high degree of control. Larvicides applied to pecan foliage for control of *S. juglandifoliella* and *Cameraria caryaefoliella* (Clemens) did not effectively reduce these larval populations.

Descriptors/Keywords: CAMAERARIA-CARYAEFOLIELLA, DIMETHOATE, CARBARYL, FENVALERATE, INSECTICIDE, DIFLUBENZURON, INSECT GROWTH REGULATOR, SAMPLING, FORECASTING, APPLICATION TIMING, NUTS CROP INDUSTRY

Record - 528

HEYNEN, V. C 1985. INVESTIGATIONS ON THE INFLUENCE OF DIFLUBENZURON (DIMILIN) ON THE HOST-PARASITE-SYSTEM SPODOPTERA LITTORALIS BOISD. (LEP., NOCTUIDA) MICROPLITIS RUFICENTRIS (HYM., BRACONIDAE). J. OF APPLIED ENTOMOLOGY 100(2): 113-132.

Record - 529

EVALUATION OF THE CONTROL OF MOSQUITOES WITH INSECT GROWTH REGULATORS
HO C-M; WU S-H; WU C-C

THIRD SEMINAR ON THE CONTROL OF VECTORS AND PESTS, KAOHSIUNG CITY,
TAIWAN, MARCH 23, 1990. KAOHSIUNG J MED SCI 6 (7). 1990. 366-375.
Language: ENGLISH

Descriptors/Keywords: ARMIGERES-SUBALBATUS, AEDES-ALBOPICTUS, AEDES-AEGYPTI,
CULEX-TRITAENIORHYNCHUS, CULEX-QUINQUEFASCIATUS, CHLORFLUAZURON,
DIFLUBENZURON, EL-494, METHOPRENE, FLUFENOXURON, TEFLUBENZURON, JUGLONE,
PLUMBAGIN, UV IRRADIATION

Record - 530

EFFECT OF DIMILIN A CHITIN SYNTHESIS INHIBITOR ON THE GROWTH AND
DEVELOPMENT OF LARVAE OF AEDES ALBOPICTUS SKUSE

HO C-M; HSU T-R; WU J-Y; WANG C-H

CHIN J ENTOMOL 7 (2). 1987. 131-142.

Full Journal Title: Chinese Journal of Entomology

Language: ENGLISH

ABSTRACT

The growth inhibiting effects of Dimilin on larvae of *Aedes albopictus* Skuse were evaluated morphologically and histologically with light, scanning and transmission electron microscopy in a laboratory setting. We observed various aberrations in the larvae, pupae and adults after the larvae had been exposed to Dimilin for 24 hours. These aberrations were dose-dependent, and younger instars being more susceptible than the older ones. When treated with Dimilin at 50% lethal concentration (LC50), most 2nd- and 3rd-instar larvae died during molting, while most 4th-instar larvae developed into larval-pupal intermediates or abnormal adults. Daily histological inspections of the 4th-instar larvae treated with 12.5 ppb of Dimilin revealed no noticeable damage in the internal organs and tissues of larvae. However, when the development of the larvae was delayed by Dimilin treatments, their abdominal cuticle became thicker and could not apolyze from the epidermis at molting. Exposing 3rd-instar to 0.125 ppb of Dimilin caused the splitting of cuticle and swelling of anal gills in some surviving 4th-instar larvae, as observed under a scanning electron microscope. Ultrathin sections of the integument of these larvae showed that the endocuticular laminae became obscured.

Descriptors/Keywords: CUTICLE, MORPHOLOGICAL, ABNORMALITY, HISTOLOGY,
TRANSMISSION, ELECTRON MICROSCOPY, SCANNING ELECTRON MICROSCOPY

Record - 531

SIDE EFFECTS OF FENOXYCARB AND DIFLUBENZURON ON SECONDARY PESTS IN APPLE
ORCHARDS

HOEHN H; WILDBOLZ T

INTERNATIONAL SYMPOSIUM ON INTEGRATED PLANT PROTECTION IN ORCHARDS
(ISIPPO): PART 1, GODOLLO, HUNGARY, JULY 31-AUGUST 5, 1990. ACTA
PHYTOPATHOL ENTOMOL HUNG 27 (1-4 PART 1). 1992. 281-287.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: CYDIA-POMONELLA, ERMINE MOTH, LEAFMINER, FRUIT, TORTRIX,
INSECTICIDES

Record - 532

EFFECTS OF BENZOYLPHENYL UREAS ON GROWTH OF B16 MELANOMA CELLS IN-VITRO
AND IN-VIVO

HOFS H P; MCVIE J G

INVEST NEW DRUGS 9 (3). 1991. 227-232.

Full Journal Title: Investigational New Drugs

Language: ENGLISH

ABSTRACT

New analogs of diflubenzuron, a benzoylphenyl urea, are tested on their in vitro cytostatic activity against B16 melanoma cells. The following structure-activity relationship was established: substitution by a hydroxylated function at the ortho, meta or para position or by a dimethylamino function at the ortho position of the benzoyl moiety appeared to be necessary for cytostatic activity in vitro. Acetoxy functions at the ortho position or hydroxy functions at the para position of the aniline ring resulted also in active compounds. A number of these benzoylphenyl ureas are selected for in vivo evaluation of antitumor activity on B16 melanoma growing s.c.. Although many of the tested benzoylphenyl ureas delayed tumor growth during the first ten days of drug treatment, only a few increased animal life span. The best results (%T/C) were obtained with compounds 5 (127%), 7 (147%), 13 (135%) and 16 (135%), which all have hydroxylated functions in the benzoyl moiety.

Descriptors/Keywords: MOUSE, MELANOMA, CELL LINE, DIFLUBENZURON, ANTINEOPLASTIC-DRUG, PHARMACODYNAMICS, QUANTITATIVE, STRUCTURE-ACTIVITY RELATIONSHIP

Record - 533

HOLCK, A. R. AND C. L. MEEK. 1987. DOSE-MORTALITY RESPONSES OF CRAWFISH AND MOSQUITOES TO SELECTED PESTICIDES. JOURNAL OF THE AMERICAN MOSQUITO CONTROL ASSOC. 3:407-411.

Record - 534

HOLLAND, D. 1975. EFFICACY AND NON-TARGET EVALUATION OF DIMILIN 25 WP AGAINST THE GYPSY MOTH. PRELIM. PROGRESS REPORT. JAN 1975 THROUGH SEPT 1975. UNPUBLISHED STUDY RECEIVED JAN 12, 1976 UNDER 148-1170, SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 535

HOLTZ, R. B., N. MARKOWITZ AND B. SPRUCE. 1981. DEVELOPMENT OF AN EFFECTIVE DELAYED RELEASE PESTICIDE FOR CONTROL OF SCIARID FLIES. PROC. OF THE 11TH INT'L SCI. CONG. ON THE CULT. OF EDIBLE FUNGI. AUSTRALIA, 1981. EDITED BY N. G. NAIR, A. D. CLIFT. VOL 1: 551-561

Record - 536

FIELD EVALUATION OF INSECT GROWTH REGULATOR FORMULATIONS ON COTTON INSECTS

HOPKINS A R; MOORE R F; JAMES W

J AGRIC ENTOMOL 1 (2). 1984. 142-146.

Full Journal Title: Journal of Agricultural Entomology

Language: ENGLISH

ABSTRACT

The insect growth regulators (IGR), Ciba Geigy CGA-112913 (N-[4(3-chloro-5-trifluoromethyl-2-pyridinyl-oxy)-3,5-dichloro-phenyl-amino carbonyl]-2,6-difluorobenzamide), Alsystin (2-chloro-N-[[[4-(trifluoromethoxy)phenyl]amino]carbonyl]benzamide), penfluron and diflubenzuron, were all applied as ULV [ultra low volume] or conventional sprays to cotton at 0.07 kg AI[active ingredient]/ha, except CGA-112913 which was applied at 0.14 kg AI/ha. Emergence of progeny of *Anthonomus grandis grandis* Boheman from infested squares in all treatments was reduced significantly when compared to the untreated control. Foliar sprays of CGA-112913 + azinphosmethyl at 0.14 + 0.28 kg AI/ha gave significantly better larval control of *Heliothis* spp. [*H. zea*, *H. virescens*]; cabbage looper, *Trichoplusia ni*

(Huebner); and soybean looper, *Pseudoplusia includens* (Walker), than did foliar sprays of Alsystin + azinphosmethyl at 0.34 + 0.28 kg AI/ha. Both IGR + azinphosmethyl gave comparable larval control of fall armyworm, *Spodoptera fugiperda* (J.E. Smith), and European corn borer, *Ostrinia nubilalis* (Huebner).

Descriptors/Keywords: ANTHONOMUS-GRANDIS-GRANDIS, HELIOTHIS, HELIOTHIS-VIRESCENS, TRICHOPLUSIA-NI, PSEUDOPLUSIA-INCLUDENS, SPODOPTERA-FRUGIPERDA, OSTRINIA-NUBILALIS, CGA-112913, ALSYSTIN, PENFLURON, DIFLUBENZURON, AZINPHOS-METHYL, EMERGENCE, ULTRALOW VOLUME

Record - 537

EFFICACY OF DIFLUBENZURON DILUTED IN 3 VOLUMES OF OILS ON BOLL WEEVIL
ANTHONOMUS GRANDIS GRANDIS PROGENY

HOPKINS A R; MOORE R F; JAMES W

J ECON ENTOMOL 75 (2). 1982. 385-386.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Diflubenzuron (70 g of AI[active ingredient]/ha) was applied to cotton at 2.3, 4.7 and 9.4 l of nonphytotoxic oil (Sun Oil 7N or Dimoil)/ha with ground and aerial equipment. There was a significant reduction in the number of adult weevils, *A. grandis grandis* Boheman, reared from punctured squares when compared with the untreated control. There was no statistical difference in emergence of adults from infested squares collected in plots treated with the 3 volumes of oils.

Descriptors/Keywords: COTTON, STATISTICS

Record - 538

ANGORA GOAT BITING LOUSE RELATIONSHIP BETWEEN INGESTION OF DIFLUBENZURON
AND ECDYSIS

HOPKINS D E; CHAMBERLAIN W F

J ECON ENTOMOL 71 (1). 1978 25-26.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

When diets coated with diflubenzuron [N-([(4-chlorophenyl)amino]carbonyl)-2,6-difluorobenzamide] were fed to 3rd-instar *Bovicola limbatus* (Gervais), the inhibition of ecdysis increased progressively as the age of the nymphs increased. The LC₅₀ for lice fed diflubenzuron on days 1, 2, 3, 4, or 5 of their 6 day development period were, respectively, 57.6, 35.0, 14.4, 4.1 and 1.8 ppm (little or no diet was ingested on the 6th day). Relatively high levels of diflubenzuron (100-250 ppm) fed the 1st day of the 3rd instar prevented normal growth in 20-50% of the nymphs even though they lived for 6 or more days.

Descriptors/Keywords: BOVICOLA-LIMBATUS, N-4 CHLOROPHENYLAMINOCARBONYL-2
6-DIFLUORO BENZAMIDE, INSECT GROWTH REGULATOR

Record - 539

INHIBITION OF MATURATION IN THE LARVIPAROUS SHEEP KED BY DIFLUBENZURON
AND METHOPRENE

HOPKINS D E; CHAMBERLAIN W F

SOUTHWEST ENTOMOL 3 (4). 1978. 292-294.

Full Journal Title: Southwestern Entomologist

Language: ENGLISH

ABSTRACT

When sheep infested with the sheep ked (a larviparous dipteran), *Melophagus ovinus* (L.), were dipped in 0.1 or 0.2% diflubenzuron (N-[[[(4-chlorophenyl)]amino]carbonyl]-2,6-difluorobenzamide) or methoprene (isopropyl (E,E)-11-methoxy-3,7,11-trimethyl-2,4-dodecadienoate), the maturation of the keds was affected. Diflubenzuron inhibited formation of pupae and methoprene inhibited eclosion of adults.

Descriptors/Keywords: MELOPHAGUS-OVINUS, N-4 CHLOROPHENYLAMINOCARBONYL-2-6-DIFLUORO BENZAMIDE, METHOPRENE, DIP, SHEEP

Record - 540

HOPKINS, D. E. AND W. F. CHAMBERLAIN. 1976. DIFLUBENZURON: RELATIONSHIP BETWEEN AGE OF EXPOSED IMMATURE HORN FLIES HAEMATOBIA IRRITANS AND INHIBITION OF MATURATION. SOUTHWEST ENTOMOL. 1 (3): 114-117.

Record - 541

TISSUE DISTRIBUTION OF CARBON-14 DIFLUBENZURON IN ATLANTIC SALMON SALMO SALAR

HORSBERG T E; HOYT

ACTA VET SCAND 32 (4). 1991. 527-533.

Full Journal Title: Acta Veterinaria Scandinavica

Language: ENGLISH

ABSTRACT

Diflubenzuron is a potent inhibitor of chitin synthesis, with potential use against salmon lice infestations. The absorption, distribution and elimination of the substance in Atlantic salmon was examined after a single, oral dose of 75 mg/kg bodyweight. The kinetic properties were studied by whole-body autoradiography, liquid scintillation counting and thin layer chromatography, using a ¹⁴C-labelled isotope of the substance. The drug was poorly absorbed from the intestine, but reached a concentration of more than 4 .mu.g/g in the mucus layer of the skin 2 days after administration. If maintained for several days, this concentration is probably sufficient to control all moulting stages of sea lice in Atlantic salmon. The main route of excretion was via the bile.

Descriptors/Keywords: ANTIPARASITIC-DRUG, LICE, INFESTATION

Record - 542

EFFECTS OF PESTICIDES AND ANTIBIOTICS ON CHITIN SYNTHESIS IN BLUE CRABS

HORST M N; WALKER A

75TH ANNUAL MEETING OF THE FEDERATION OF AMERICAN SOCIETIES FOR EXPERIMENTAL BIOLOGY, ATLANTA, GEORGIA, USA, APRIL 21-25, 1991. FASEB (FED AM SOC EXP BIOL) J 5 (4). 1991. A463.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: ABSTRACT, DIFLUBENZURON, CUTICLE, DEPOSITION, EXOSKELETON

Record - 543

THE BIOSYNTHESIS OF CRUSTACEAN CHITIN BY A MICROSOMAL ENZYME FROM LARVAL BRINE SHRIMP ARTEMIA SALINA

HORST M N

J BIOL CHEM 256 (3). 1981. 1412-1419.

Full Journal Title: Journal of Biological Chemistry

Language: ENGLISH

ABSTRACT

A microsomal preparation from larval stages of the brine shrimp *A. salina* catalyzed the transfer of N-acetyl-D-glucosamine from UDP-N-acetylglucosamine to an endogenous acceptor. The product was identified as chitin by its resistance to extraction with alkali and high concentrations of urea and the liberation of chito-oligosaccharides by treatment with purified chitinases. The enzyme requires Mg^{2+} for activity and is inhibited by UDP and diflubenzuron, but not by Polyoxin D. The pH optimum is 7.0. The enzyme is not significantly activated by N-acetyl-D-glucosamine nor by trypsin treatment. Incorporation of radioactivity into endogenous acceptor is inhibited by chitodextrins which appear to serve as alternate acceptors. The crustacean enzyme can also utilize exogenous, macromolecular chitin as acceptor. The enzyme, which was partially purified by sucrose step-gradient ultracentrifugation, appears maximally active after 72 h of larval growth.

Descriptors/Keywords: LARVAL GROWTH, CHITINASE, PH OPTIMUM, DIFLUBENZURON, POLYOXIN D, METABOLIC-DRUG

Record - 544

HORSTMANN, K. 1982. EFFECTS OF AN APPLICATION OF DIMILIN ON A POPULATION OF OAK TORTRICIDS LEPIDOPTERA: TORTRICIDAE IN LOWER FRANCONIA (*TORTRIX VIRIDANA*, *ZEIRAPHERA INSERTANA*, GERMANY, FEDERAL REPUBLIC). J. OF APPLIED ENTOMOL. 94 (5): 490-497.

Record - 545

EFFECT OF DIFLUBENZURON FORMULATIONS ON THE EGG PARASITE *TRICHOGRAMMA PRETIOSUM*

HOUSE V S; ABLES J R; MORRISON R K; BULL D L

SOUTHWEST ENTOMOL 5 (2). 1980. 133-138.

Full Journal Title: Southwestern Entomologist

Language: ENGLISH

ABSTRACT

A mixture of diflubenzuron (25% WP [wetable powder], 70 g AI[active ingredient]/ha), crop oil (Savol, 4.7 l/ha) and water applied to control the boll weevil, *Anthonomus grandis* Boheman, had an adverse effect on the level of parasitism of *Heliothis* spp. eggs by *Trichogramma pretiosum* Riley. Laboratory studies subsequently demonstrated that application of diflubenzuron alone did not affect levels of parasitism; application of mixtures of crop oil and diflubenzuron or of crop oil alone significantly reduced the levels of parasitism of *Heliothis* spp. eggs by *T. pretiosum*.

Descriptors/Keywords: ANTHONOMUS-GRANDIS HELIOTHIS-SPP

Record - 546

DIFLUBENZURON FOR CONTROL OF THE BOLL WEEVIL IN UNISOLATED COTTON FIELDS

HOUSE V S; ABLES J R; JONES S L; BULL D L

J ECON ENTOMOL 71 (5). 1978 797-800.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

In a 1976 test in unisolated cotton fields, different rates (35, 70 and 140 g AI[active ingredient]/ha) of the insect growth regulator [IGR] diflubenzuron, N-([(4-chlorophenyl)amino]carbonyl)-2,6-difluorobenzamide, were applied aerially over a 6 wk period to suppress populations of *Anthonomus grandis* Boheman. There was a pronounced dosage rate response to the chemical in that the

percentage emergence of adult weevils from cotton squares collected from treated fields averaged 37.7, 22.2 and 15.8% at the lowest, median and highest rate, respectively. Adult emergence from squares collected in untreated control plots averaged 70% during the same period. The reduction in weevil emergence was most pronounced in the F1 generation and somewhat less in the F2 and F3 generations. A similar emergence pattern was observed in 1977 but due to a delay in the initial treatment the effect lagged by 1 generation. In both years, there was an apparent rebound by pest populations during the latter part of the season, indicated by increased emergence from the field collected squares. This result was attributed to movement of untreated weevils into the treated fields.

Descriptors/Keywords: ANTHONOMUS-GRANDIS, INSECT GROWTH REGULATOR, N-4 CHLOROPHENYLAMINOCARBONYL-2 6-DIFLUORO BENZAMIDE, EMERGENCE

Record - 547

SUSCEPTIBILITY OF THE CODLING MOTH LASPEYRESIA POMONELLA TO DIFLUBENZURON
HOYING S A; RIEDL H

J ECON ENTOMOL 73 (4). 1980. 556-560.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

In tests with adults, eggs and 1st instars of *L. pomonella* (L.), only the eggs were susceptible to diflubenzuron. Young eggs < 250.degree. H (degree h, base 10.degree. C) old were most susceptible, but susceptibility declined with age. Significant mortality occurred also in 1st instars which hatched from eggs treated during the 1st 1/2 of the incubation period. Direct exposure of 1st instars to surface residues did not affect survival or subsequent development to the adult stage. Combined egg and 1st instar mortality averaged 91% if exposure occurred prior to the midpoint of egg development. Dosage-mortality curves were determined for eggs < 250.degree. H old which yielded LC50 values of 0.207 mg/l for technical diflubenzuron and 0.437 mg/l for the 25 WB [wetttable powder]. Diflubenzuron applied topically to adult moths caused no mortality, nor did it affect normal oviposition behavior or viability of the offspring. Under field conditions, residues on pear foliage remained active against coding moth eggs for at least 6 wk.

Descriptors/Keywords: PEAR, FOLIAGE, ADULT, EGG, 1ST INSTAR, DEGREE HOUR, DOSAGE, MORTALITY, INCUBATION, SURFACE RESIDUE, LC-50, TOPICAL APPLICATION, OVIPOSITION

Record - 548

HOYT, S. 1976. APPLE INSECT CONTROL STUDIES IN WASHINGTON DURING 1976; SUBMITTER NO. 4208. UNPUBLISHED STUDY RECEIVED FEB. 13, 1979 UNDER 148-EX-26; PREPARED BY WASHINGTON STATE UNIV. TREE FRUIT RESEARCH CENTER, SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO. KANSAS CITY, KS.

Record - 549

HUBER, C. M., AND E. H. MANCHESTER. 1988. FINAL REPORT ON THE ERADICATION OF THE GYPSY MOTH FROM THE TUSQUITEE RANGER DISTRICT ON THE NANTAHALA NATIONAL FOREST. FPM ASHEVILLE, FIELD OFFICE REPORT #89-1-7.

Record - 550

HUDDLESTON, E. M. 1978. EFFICACY OF DIMILIN ON RANGE CATERPILLAR. FINAL REPORT. PREPARED BY ELLIS HUDDLESTON. TUSCON, ARIZ.: COTTON INSECTS BIOLOGICAL CONTROL LAB. 8 PAGES.

Record - 551

HUDSON, R., R. TUCKER, AND M. HAEGEL. 1984. HANDBOOK OF TOXICITY OF PESTICIDES TO WILDLIFE. USDI PUBLICATIONS 153, WASHINGTON, DC.

Record - 552

MULTINOMIAL LOGIT ANALYSIS OF THE EFFECTS OF CHEMICAL MIXTURES

HUGHES G A; ROBERTSON J L; SAVIN N E

J ECON ENTOMOL 84 (6). 1991. 1957-1968.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Uses of a multinomial logit model for investigations of chemical interactions were investigated. The probabilities of four types of effects when mixtures of benzoylphenylureas (BPU; diflubenzuron or triflumuron) or a juvenile hormone analogue (JHA; methoprene) with selected pyrethroids (fenvalerate or permethrin) were compared. Bioassays were done on fourth- or sixth-instar western spruce budworm, *Choristoneura occidentalis* Freeman. When sprayed on fourth instars, mixtures of methoprene + fenvalerate, triflumuron + fenvalerate, and diflubenzuron + permethrin produced effects significantly different from those predicted by the hypothesis of additive effectiveness. When sprayed on sixth instars, only mixtures of the BPUs with fenvalerate produced effects significantly different from this hypothesis. We conclude that the multinomial logit model may be useful to identify interactions between chemicals that merit biochemical investigation.

Descriptors/Keywords: CHORISTONEURA-OCCIDENTALIS, INSECT, MATHEMATICAL MODEL, DIFLUBENZURON, TRIFLUMURON, METHOPRENE, FENVALERATE, PERMETHRIN, INSECTICIDE, AGRICHEMICAL

Record - 553

HUGHES, G. A. J. L. ROBERTSON, AND N. E. SAVIN. 1987. COMPARISON OF CHEMICAL EFFECTIVENESS BY THE MULTINOMIAL LOGIT TECHNIQUE. J. ECON. ENTOMOL. 80 (1): 18-28.

Record - 554

SIMULATION OF FLY-WAVES TO ASSESS THE ABILITY OF DIFLUBENZURON TO PROTECT SHEEP AGAINST FLYSTRIKE BY LUCILIA CUPRINA

HUGHES P B; LEVOT G W

VET PARASITOL 24 (3-4). 1987. 275-284.

Full Journal Title: Veterinary Parasitology

Language: ENGLISH

ABSTRACT

Sheep were exposed to mass-released gravid females of the sheep blowfly, *Lucilia cuprina*, in a fly-proof animal house at various times after treatment with the insecticide diflubenzuron (1000, 1500 and 2500 ppm a.i.). Untreated sheep were similarly exposed as controls, while sheep treated with either diazinon (400 ppm a.i.) or cyromazine (1000 ppm) were used as standards for comparison. Before exposure, groups of sheep were wetted by simulating rainfall in the animal house in order to increase their susceptibility to flystrike by *L. cuprina*. In one trial, sheep jetted with either diflubenzuron or cyromazine (both at 1000 ppm) were protected against flystrike for a least 110 days. At 1500 ppm, diflubenzuron performed significantly better with no bodystrike occurring in the group until the end of the trial at 170 days. Under more severe fly pressure in a second trial diflubenzuron at concentration up to 2500 ppm provided the same protection as diazinon (approximately 56 days), but performed significantly better thereafter. No cross-resistance to diflubenzuron was found in diazinon-resistant field populations of *L. cuprina* in laboratory bioassays. The data show that diflubenzuron would be

suitable as a prophylactic treatment for flystrike.

Descriptors/Keywords: PROPHYLACTIC TREATMENT, EFFECTIVE, DURATION, DIAZINON, CYROMAZINE, INSECTICIDE

Record - 555

PEAR PYRUS COMMUNIS L BARTLETT PEAR PSYLLA PP PSYLLA PYRICOLA FOERSTER
PEAR SEASONAL PEAR PSYLLA CONTROL EXPERIMENT 1990

HULL L A; FELLAND C M

THOMAS, J. H. (ED.). INSECTICIDE AND ACARICIDE TESTS, VOL. 16. 327P.

ENTOMOLOGICAL SOCIETY OF AMERICA: LANHAM, MARYLAND, USA. ILLUS. PAPER. 0
(0). 1991. 30-32.

Language: ENGLISH

ABSTRACT

Descriptors/Keywords: INSEGAR, DIMILIN, ASANA XL, MORESTAN, MITAC, SUN 6 E OIL,
AMBUSH 2E

Record - 556

HUNT, J. 1975. EVALUATION OF DIMILIN W-25 FOR THE CONTROL OF CULEX NIGRIPALPUS AND
PSOROPHORA CONFINNIS. REPORT THOMPSON-HAYWARD CHEMICAL COMPANY NO. C3833.

Record - 557

LABORATORY AND FIELD STUDIES IN CHILE ON THE CONTROL OF EPINOTIA APOREMA
LEPIDOPTERA OLETHREUTIDAE AND RACHIPLUSIA NU LEPIDOPTERA NOCTUIDAE ON
PHASEOLUS VULGARIS BEANS WITH GROWTH REGULATORS BACILLUS THURINGIENSIS AND
AVERMECTIN

IBARRA L F; ARAYA J E; ARRETZ-V P

CROP PROT 11 (2). 1992. 186-190.

Full Journal Title: Crop Protection

Language: ENGLISH

ABSTRACT

Laboratory and field trials were conducted to evaluate the effectiveness of control of the larvae of *Rachiplusia nu* and *Epinotia aporema* (Lepidoptera: Noctuidae, and Olethreutidae, respectively), on *Phaseolus vulgaris* beans, by avermectin, *Bacillus thuringiensis*, diflubenzuron, triflumuron, and endosulfan. Two days after application in the laboratory, endosulfan resulted in 90% mortality of *R. nu*; avermectin, *B. thuringiensis*, triflumuron and diflubenzuron caused 48, 36, 28, and 16% mortality, respectively, on *R. nu* larvae. Triflumuron and diflubenzuron had a low initial activity against the larvae of *E. aporema* (10 and 4% mortality 2 days after application). All treatments obtained high final mortality levels (84-98%) of *R. nu*. Diflubenzuron and triflumuron caused slow initial effects on *R. nu* and *E. aporema*, but a high final cumulative mortality, in part attributable to malformation of pupae. In the field trial, all treatments had generally fewer larvae than the control. Fewer pods were damaged by *E. aporema* with endosulfan and avermectin 12 days after application than in the other treatments. The percentage of damaged pods increased largely thereafter in the controls, reaching 16.3% 26 days after the application date. Triflumuron was the only treatment that did not differ from the control 15 days after application, corroborating its slow insecticide action on *E. aporema* in the laboratory.

Descriptors/Keywords: DIFLUBENZURON, ENDOSULFAN, TRIFLUMURON, AVERMECTIN,
INSECTICIDE, BIOLOGICAL CONTROL, CHITIN SYNTHESIS INHIBITOR

Record - 558

STUDIES ON THE OVICIDAL ACTIVITY OF DIFLUBENZURON ON CAENORHABDITIS ELEGANS NEMATODA

IBRAHIM A M

DIRASAT 13 (7). 1986. 139-148.

Full Journal Title: Dirasat

Language: ENGLISH

ABSTRACT

The effects of a phenylbenzoylurea compound named diflubenzuron on the eggs of the free living nematode *Caenorhabditis elegans* was investigated. Treatment of eggs from diflubenzuron-treated hermaphrodites of *C. elegans* with concentrations of diflubenzuron greater than 5 .mu.g/ml significantly impaired hatching. Following treatment with 40 .mu.g/ml diflubenzuron, hatching of *C. elegans* eggs was reduced by 82% overall and completely inhibited in 2/5 of the egg-batches used in the test. Percentage of hatching in eggs treated with 10 and 20 .mu.g/ml diflubenzuron treatments was 35 and 67% less than control, respectively. Nematodes collected from untreated control cultures of *C. elegans* hatched normally when subjected to 5-40 .mu.g/ml of diflubenzuron. Studies on the uptake of ¹⁴C-labelled diflubenzuron showed that *C. elegans* eggs produced by hermaphrodites cultured in a radiolabelled medium contained about 3% of the mean radioactivity/individual nematode. Therefore, reduction of egg hatching was mainly attributed to incorporation of diflubenzuron or its metabolites in the nematode eggs. Diflubenzuron also affected the ultrastructure of *C. elegans* egg shell. Normal untreated eggs clearly showed 3 distinct layers found in the egg shell namely, the vitelline, chitinous and lipid layers. Following treatment of hermaphrodites with 10 .mu.g/ml diflubenzuron, the chitinous layer in the egg shell of *C. elegans* was partially disintegrated and demarcation of the inner lipid layer was not clear.

Descriptors/Keywords: SHELL, ULTRASTRUCTURE, CHITINOUS LAYER, RADIOLABELING, CULTURE MEDIUM

Record - 559

IL'IASCHCHENKO, V. K. 1981; RESULTS OF EXPOSURE TO SYNTHETIC INSECT DEVELOPMENT INHIBITORS IN PSOROPTES CUNICULI (PSOROPTIDAE) MITES.; PARAZITOLOGIJA, MAR.-APR. 15 (2) 144-149.

Record -560

ILKANIEC, Z. 1980. TOXICITY OF SOME PESTICIDES FOR BEES IN LABORATORY INVESTIGATIONS. ROCZ. AKA. ROLN. POZNANIU. 120: 147-151.

Record - 561

EFFECTS OF DEFOLIATING PESTS ON SOYBEAN GLYCINE-MAX CANOPY CARBON DIOXIDE EXCHANGE AND REPRODUCTIVE GROWTH

INGRAM K T; HERZOG D C; BOOTE K J; JONES J W; BARFIELD C S

CROP SCI 21 (6). 1981. 961-968.

Full Journal Title: Crop Science

Language: ENGLISH

ABSTRACT

Defoliation during reproductive growth of soybean [*G. max* (L.) Merr.] may significantly reduce yields. The relationships among organism-induced defoliation, CO₂ exchange rates and reproductive growth in field-grown soybean were studied. Soybean (cv. Bragg) plots were sprayed in a factorial design with diflubenzuron (0.035 kg a.i.[active ingredient]/ha) and a benomyl-maneb mixture (1.12 kg a.i./ha) on 2 dates, 1st at early flowering (Aug. 5) and again at early pod set (Aug. 19). Diflubenzuron application prevented defoliation by velvetbean caterpillar (*Anticarsia gemmatilis* Hubner). By Sept. 12, LAI [leaf

area index] was reduced from 5.5 to 2.8, leaf dry weight from 185 to 110 g/m² and midday light interception from 94 to 72% in defoliated as compared to nondefoliated plots. While canopy specific leaf weight (SLW) increased in all treatments during the experimental period, SLW was 1.0 mg/cm² higher in defoliated than nondefoliated plots. On Sept. 4 defoliated plots were sprayed with diflubenzuron (0.035 kg a.i./ha) and carbaryl (0.56 kg a.i./ha) to prevent further leaf loss. Canopy CO₂ exchange was measured at various photosynthetic photon flux densities (PPFD) to develop photosynthetic light response curves. Net canopy photosynthesis at 1500 $\mu\text{E}[\text{einstein}]/\text{m}^2 \text{ per s}$ PPFD (PN [net photosynthesis] 1500) declined steadily in all treatments during seed growth. PN1500 and plant dark respiration, respectively, were reduced by 6.8 and 3.3 mg CO₂/dm² per h in defoliated compared to nondefoliated plots. Soil CO₂ efflux rates did not differ significantly ($P < 0.05$) between treatments. Differences in pod growth rates (7.6 and 9.21 g/m² per day) and yields (434 and 502 g/m²) between defoliated and nondefoliated plots, respectively, were attributed to differences in canopy photosynthetic capacity. There was no apparent effect of defoliation on seed growth duration or seed abortion. Yield reduction in defoliated plots was related primarily to slowing of the individual seed growth rate. Balance of C flux to seeds showed relationships between instantaneous canopy CO₂ exchange measurements and sequential harvest data.

Descriptors/Keywords: ANTICARSIA-GEMMATALIS, CULTIVAR, BRAGG, YIELD REDUCTION, DIFLUBENZURON, BENOMYL, MANEB, LEAF AREA INDEX, NET PHOTOSYNTHESIS, LIGHT HARVEST, PHOTON, FLUX, DENSITY, RESPIRATION, SEED ABORTION

Record - 562

INKPEN, W. 1978. EVALUATION OF DIMILIN G! FOR THE CONTROL OF MOSQUITOES; REPORT THOMPSON-HAYWARD CHEMICAL COMPANY NO. C4626 DI-1140.

Record - 563

SELECTIVE INSECT CONTROL AGENTS MECHANISMS AND AGRICULTURAL IMPORTANCE
ISHAAYA I

OTTO, D. AND B. WEBER (ED.). INSECTICIDES: MECHANISM OF ACTION AND RESISTANCE; SECOND SYMPOSIUM, REINHARDSBRUN, GERMANY. XVIII+499P. INTERCEPT LTD: ANDOVER, ENGLAND, UK. ISBN 0-946707-38-3. 0 (0). 1992. 127-133.
Language: ENGLISH
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Descriptors/Keywords: BENZOYLPHENYL UREAS, DIFLUBENZURON, CHLORFLUAZURON, TEFLUBENZURON, HEXAFLUMURON, INSECT GROWTH REGULATOR, AGRICULTURAL PEST CONTROL

Record - 564

INSECT RESISTANCE TO BENZOYLPHENYLUREAS AND OTHER INSECT GROWTH REGULATORS MECHANISMS AND COUNTERMEASURES

ISHAAYA I

MULLIN, C. A. AND J. G. SCOTT (ED.). ACS (AMERICAN CHEMICAL SOCIETY) SYMPOSIUM SERIES, VOL. 505. MOLECULAR MECHANISMS OF INSECTICIDE RESISTANCE: DIVERSITY AMONG INSECTS; 202ND NATIONAL MEETING OF THE AMERICAN CHEMICAL SOCIETY, NEW YORK, NEW YORK, USA, AUGUST 25-30, 1991. XIII+322P. AMERICAN CHEMICAL SOCIETY: WASHINGTON, DC, USA. ISBN 0-8412-2474-9. 0 (0). 1992. 231-246.
Language: ENGLISH
Document Type: CONFERENCE PAPER

Descriptors/Keywords: TRIBOLIUM-CASTANEUM, SPODOPTERA-LITTORALIS, CULEX-PIPIENS, HEXAFLUMURON, ESTERASES, HYDROLASES, CHLORFLUAZURON, DIFLUBENZURON, METHOPRENE, BIOLOGICAL CONTROL, INSECTICIDES, DETOXIFICATION

Record - 565

INSECT DETOXYFING ENZYMES THEIR IMPORTANCE IN PESTICIDE SYNERGISM AND RESISTANCE

ISHAAYA I

UNITED STATES/ISRAEL BARD WORKSHOP ON NEW TARGETS FOR INSECT MANAGEMENT IN CROP PROTECTION, JERUSALEM, ISRAEL, OCTOBER 5-10, 1991. PHYTOPARASITICA 19 (4). 1991. 352.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: ABSTRACT, TRICHOPLUSIA-NI, SPODOPTERA-LITTORALIS, BEMISIA-TABACI, TRIBOLIUM-CASTANEUM, MUSCA-DOMESTICA, CHRYSOPA-CARNEA, OXIDASE, ESTERASE, GLUTATHIONE, TRANSFERASE, PROFENOFOS, MONOCROTOPHOS, ACEPHATE, METHIDATHION, CYPERMETHRIN, PHENYL, SALIGENIN, CYCLIC, PHOSPHONATE, TRANS PERMETHRIN, ACYLUREA, DIFLUBENZURON, CHLORFLUAZURON, S S S TRIBUTYL, AGRICULTURAL PESTS, PREDATOR

Record - 566

BENZOYLPHENYL UREAS DETOXIFICATION SYNERGISM AND MODES OF RESISTANCE IN TRIBOLIUM CASTANEUM AND SPODOPTERA LITTORALIS

ISHAAYA I

7TH INTERNATIONAL CONGRESS OF PESTICIDE CHEMISTRY (IUPAC), HAMBURG, GERMANY, AUGUST 5-10, 1990. PESTIC SCI 30 (3). 1990. 351-353.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: INSECT, CHLORFLUAZURON, TEFLUBENZURON, HEXAFLUMURON, DIFLUBENZURON, INSECTICIDE, AGRICHEMICAL, PEST CONTROL

Record - 567

PROPERTIES AND TOXICOLOGICAL SIGNIFICANCE OF DIFLUBENZURON HYDROLASE ACTIVITY IN SPODOPTERA LITTORALIS LARVAE

ISHAAYA I; DEGHEELE D

PESTIC BIOCHEM PHYSIOL 32 (2). 1988. 180-187.

Full Journal Title: Pesticide Biochemistry and Physiology

Language: ENGLISH

ABSTRACT

Optimal assay conditions for gut diflubenzuron (DFB) hydrolase(s) of the Egyptian cotton leaf worm *Spodoptera littoralis* larvae are 0.9 mg protein of the postmitochondrial supernatant fraction incubated for 2 hr at 37.degree.C with 0.5 nmol [14C]DFB (uniformly labeled on the aniline ring) in 0.4 ml of 0.05 M glycine-NaOH buffer (pH 9.0). The radiolabeled mtabolites are separated and quantitatively evaluated using a TLC procedure. DFB hydrolase activity is a major factor for DFB to hydrolyze DFB detoxification in *S. littoralis* larvae. This conclusion is based on the ability of the larval gut enzyme to 4-chloroaniline (4-CA) and 4-chlorophenylurea (4-CPU), 4-CA being a major metabolite with a level of about 10% and 4-CPU a minor one with a level of about 1% of the total recovery. A relatively high level of radiolabeled polar metabolites is observed at the origin of the TLC plate; these matabolites are considered to be conjugated materials. DFB hydrolysis is totally inhibited in vitro at a concentration of 10-

5 M of profenofos or DEF, which are both considered typical esterase inhibitors. Over 90% inhibition of DFB hydrolase activity in vivo is obtained when larvae are fed with castor bean leaves treated with 2.4 times. 10-4% profenofos. Addition of sublethal concentrations of profenofos to dietary DFB resulted in a considerably higher toxicity of the latter.

Descriptors/Keywords: INSECTICIDE, ENZYMATIC, DETOXIFICATION, ENHANCED TOXICITY

Record - 568

THE EFFECT OF IKI-7899 A NEW CHITIN SYNTHESIS INHIBITOR ON LARVAE OF TRIBOLIUM CASTANEUM AND SPODOPTERA LITTORALIS

ISHAAYA I; NEMNY N E; ASCHER K R S

PHYTOPARASITICA 12 (3-4). 1984. 193-198.

Full Journal Title: Phytoparasitica

Language: ENGLISH

Descriptors/Keywords: NOTE, DIFLUBENZURON, INSECT GROWTH REGULATOR

Record - 569

THE EFFECT OF BAY-SIR-8514 DIFLUBENZURON AND HERCULES 24108 ON GROWTH AND DEVELOPMENT OF TRIBOLIUM CONFUSUM

ISHAAYA I; ASCHER K R S; YABLONSKI S

PHYTOPARASITICA 9 (3). 1981. 207-210.

Full Journal Title: Phytoparasitica

Language: ENGLISH

ABSTRACT

The effect of BAY SIR 8514, diflubenzuron and Hercules 24108 on larval growth, pupation and emergence of T. confusum was determined. BAY SIR 8514 was about twice as active as diflubenzuron, whereas Hercules 24108 was much less active. BAY SIR 8514 is suggested, in addition to diflubenzuron, as a potential insecticide against stored-product insects.

Descriptors/Keywords: STORED PRODUCT INSECT, INSECTICIDE

Record - 570

EFFECT OF DIFLUBENZURON ON GROWTH AND CARBOHYDRATE HYDROLASES OF TRIBOLIUM CASTANEUM

ISHAAYA I; ASCHER K R S

PHYTOPARASITICA 5 (3). 1977. 149-158.

Full Journal Title: Phytoparasitica

Language: ENGLISH

ABSTRACT

The potency of diflubenzuron was much greater in inhibiting growth and development of 1st instar larvae of T. castaneum than of 4th instar larvae, as expressed by death at the apolytic stage and retardation of larval development. A dose-dependent decrease in the activity of trehalase, invertase and amylase was obtained in vivo with the increase in diflubenzuron concentration. At 5 ppm dietary concentration, a reduction of 37 and 27% in invertase and trehalase activity, respectively, was obtained in 4th instar larvae fed for 3 days on treated diet. Amylase activity was affected to a lesser extent. The observed disturbances of trehalase activity probably hamper the supply of glucose needed for chitin build-up and those of invertase and amylase activity might affect feeding. Diflubenzuron did not inhibit these enzymes in vitro; the in vivo effect seemed to result from general disturbances in carbohydrate metabolism.

Descriptors/Keywords: INSECTICIDE, INVERTASE, TREHALASE, AMYLASE

Record - 571

DIFLUBENZURON-INDUCED CHANGES IN ACTIVITIES OF THE CAMP-DEPENDENT PROTEIN KINASE IN THE NEWLY MOLTED INTEGUMENT OF THE AMERICAN COCKROACH IN-SITU AND CELL FREE CONDITIONS

ISHII S; MATSUMURA F

INSECT BIOCHEM MOL BIOL 22 (1). 1992. 69-79.

Language: ENGLISH

ABSTRACT

Benzoylurea-type compounds are a new class of powerful insecticides/growth regulators known to cause chitin-synthesis inhibition in vivo. We have found by using the isolated integument from the freshly molted American cockroach that diflubenzuron (Dimilin) and its active analogs cause a rise in cAMP-dependent protein kinase activity, both in intact and homogenized (cell free) systems. Such a cAMP-dependent protein kinase has been found to be particularly active in the integument during molting. The effect of diflubenzuron in isolated epidermis was observed at the 10 nM range, occurring with only active diflubenzuron analogs. At the same time, DFB was found to cause changes in protein phosphorylation on a few specific proteins both in situ and in cell free conditions in the concentration range of 10 nM to 10 .mu.M. The possibility that the action of diflubenzuron on chitin biosynthesis is directly or indirectly mediated through modulation of cAMP-dependent protein kinase system was discussed.

Descriptors/Keywords: PERIPLANETA-AMERICANA, DIMILIN, INSECTICIDE, GROWTH REGULATOR

Record - 572

ISKANADAR, MA'MOEN, M. 1985. TEST RESULT EFFECT OF DIMILIN 25WP ON FISH; REPORT SHRIMP HATCHERY STATION, PANGANDARAN, INDONESIA.

Record - 573

CROSS-RESISTANCE BETWEEN ACYLUREA INSECT GROWTH REGULATORS IN A STRAIN OF PLUTELLA XYLOSTELLA L. LEPIDOPTERA YPONOMEUTIDAE FROM MALAYSIA

ISMAIL F; WRIGHT D J

PESTIC SCI 33 (3). 1991. 359-370.

Full Journal Title: Pesticide Science

Language: ENGLISH

ABSTRACT

The activities of the acylurea insect growth regulators, chlorfluazuron, teflubenzuron and diflubenzuron, and the neurotoxic macrocyclic lactone, abamectin were assessed against a laboratory susceptible (FS) strain and a field (Cameron Highlands, Malaysia (CH) strain of the diamondback moth, *Plutella xylostella* L. using a leaf-dip bioassay at 20.degree. C. The time taken to achieve end-point mortality was found to vary considerably (9-17 days), being fastest with abamectin against the FS strain and slowest with diflubenzuron against the CH strain. The order of activity (LC50 at F6/7) against second-instar larvae of both strains was: abamectin < chlorfluazuron = teflubenzuron >>> diflubenzuron. Subsequent assays (F14) with the acylureas, flufenoxuron and hexaflumuron against the FS strain suggested that the former was slightly more active than chlorfluazuron or teflubenzuron, the latter slightly less active. The CH population was found to be 12.6-, 6.7-, 6.4- and 2.3-fold less sensitive to diflubenzuron, teflubenzuron, chlorfluazuron and abamectin respectively than the FS strain. Selection of sub-populations of the CH strain with chlorfluazuron (CHL-SEL) and teflubenzuron (TEF-SEL) for six generations (F6-11), resulted in LC50 resistance ratios of 109- and 315-fold respectively when compared with the FS strain, equivalent to an 18- and a 46-fold increase in resistance compared with the

unselected CH strain. Marked cross-resistance was also demonstrated between chlorfluazuron and teflubenzuron in both sub-populations. However, there was no evidence of cross-resistance to diflubenzuron and abamectin and little or no cross-resistance to flufenoxuron and hexaflumuron. Resistance to chlorfluazuron and teflubenzuron appeared to be relatively unstable in the TEF-SEL compared with the CHL-SEL sub-population (over 6-9 generations). However, reselection of the TEF-SEL population with chlorfluazuron (F18-20) led to a very increase in resistance to chlorfluazuron and particularly teflubenzuron. For the latter compound, resistance factors of about 1000000 were obtained (f19, 21). Such values are probably only semi-quantitative, as above a certain level of resistance feeding bioassays with acylureas (compounds which are active to a significant extent by ingestion) are likely to become rate-limiting.

Descriptors/Keywords: INSECT, ABAMECTIN, CHLORFLUAZURON, TEFLUBENZURON, DIFLUBENZURON, ACYLUREAS, FLUFENOXURON, HEXAFLUMURON, INSECTICIDE, PEST CONTROL

Record - 574

IVANOVA, G. B. 1980. RESISTANCE OF INSECTS TO DIFLUBENZURON. *KHIMIJA V SEL'SKOM KHOZIAISTVE*. 18(11): 18-19.

Record - 575

IVASHCHENKO, I. I. 1982. TOXICITY OF DIFLUBENZURON FOR THE COLORADO POTATO BEETLE LEPTINOTARSA DECEMLINEATA OF THE KRASNODAR POPULATION. *KHIMIJA V SEL'SKOM KHOZIAISTVE*. 1982 (1):27-29.

Record - 576

FATE OF DIFLUBENZURON IN WATER

IVIE G W; BULL D L; VEECH J A

J AGRIC FOOD CHEM 28 (2). 1980. 330-337.

Full Journal Title: Journal of Agricultural and Food Chemistry

Language: ENGLISH

ABSTRACT

The fate of the insect growth regulator diflubenzuron (Dimilin, N-[(4-chlorophenyl)amino]carbonyl]-2,6-difluorobenzamide) was studied in distilled water and in acidic (pH 4.0) and alkaline (pH 10.0) buffers. Heat (121.degree. C) catalyzed degradation of diflubenzuron in these aqueous media at levels greatly above its solubility in water resulted in rapid degradation to as many as 7 identified products: (4-chlorophenyl)urea, 2,6-difluorobenzoic acid, 2,6-difluorobenzamide, 4-chloroaniline, N,N'-bis(4-chlorophenyl)urea, a 2,4-quinazolinedione derivative that resulted from expulsion of HF from diflubenzuron with cyclization at the anilino N and the ortho C of the benzoyl ring, and a further reaction product of the quinazolinedione compound. Under less vigorous conditions (0.1 ppm of [¹⁴C]diflubenzuron in water or buffer, 36.degree. C), the rate of degradation was highly dependent upon pH. At pH 10.0, the half-life of diflubenzuron was < 3 days; at pH 4.0, degradation was not detected even after 56 days. In distilled water (pH .apprx. 6.0), the half-life of diflubenzuron was .apprx. 7 days. The major degradation products were (4-chlorophenyl)urea and 2,6-difluorobenzoic acid, but small amounts of 2,6-difluorobenzamide and the quinazolinedione product were also formed. When tested as an ovicide against the boll weevil or as a mosquito larvicide against *Culex quinquefasciatus*, the quinazolinedione derivative did not exhibit appreciable diflubenzuron-like biological activity. [Environmental implications are discussed.]

Descriptors/Keywords: CULEX-QUINQUEFASCIATUS, BOLL WEEVIL, MOSQUITO, INSECT GROWTH REGULATOR, OVICIDE, LARVICIDE

Record - 577

FATE OF DIFLUBENZURON IN CATTLE AND SHEEP

IVIE G W

77840, USA.

J AGRIC FOOD CHEM 26 (1). 1978 81-89.

Full Journal Title: Journal of Agricultural and Food Chemistry

Language: ENGLISH

ABSTRACT

The fate of a radiolabeled preparation of the insect growth regulator diflubenzuron (Dimilin, TH-6040, N-[[[(4-chlorophenyl)amino]carbonyl]-2,6-difluorobenzamide) was determined after oral administration to a lactating cow and castrate male sheep, in vitro incubation with ovine and bovine digestive tract fluids, and dermal application to cattle. Orally administered diflubenzuron was absorbed, extensively metabolized, and almost totally excreted by cattle and sheep. Only very small amounts of ¹⁴C were secreted into the milk of a cow fed [¹⁴C]diflubenzuron. Studies with bile-duct cannulated sheep showed that bile is of greater importance than urine in the elimination of diflubenzuron metabolites from the body of ruminants. Major metabolites of diflubenzuron excreted by the cow and sheep resulted from hydroxylation on the difluorobenzoyl and chlorophenyl rings and by cleavage between the carbonyl and amide groups to give metabolites that were excreted either free or as conjugates. Diflubenzuron was not metabolized when incubated with digestive tract fluids from these ruminants. When applied dermally to cattle held outdoors in an unprotected pasture, diflubenzuron residues disappeared rapidly, but the compound was not chemically degraded or absorbed through the skin to any detectable degree. The major hydroxylated diflubenzuron metabolite in cow milk when fed to white rats was rapidly and quantitatively excreted with little further biotransformation.

Descriptors/Keywords: RAT, SKIN, MILK

Record - 578

FATE OF DIFLUBENZURON IN THE STABLE FLY AND HOUSE FLY

IVIE G W; WRIGHT J E

J AGRIC FOOD CHEM 26 (1). 1978 90-94.

Full Journal Title: Journal of Agricultural and Food Chemistry

Language: ENGLISH

ABSTRACT

The metabolic fate of [¹⁴C]diflubenzuron (Dimilin, TH-6040, N-[[[(4-chlorophenyl)amino]carbonyl]-2,6-difluorobenzamide) was studied after topical application to adult stable flies [*Stomoxys calcitrans*] and house flies [*Musca domestica*]. Four days after treatment, ¹⁴C residues were detected on the surface and internally in treated flies, and in untreated flies of the opposite sex held with treated flies. From 35-50% of the ¹⁴C applied to the flies was detected in the excreta. Diflubenzuron was resistant to metabolism by stable flies; > 97% of the recovered ¹⁴C was the parent compound. House flies metabolized about 10% of the dose. These insects metabolized diflubenzuron by cleavage between the carbonyl and amide groups and by several undefined mechanisms. Treated stable flies secreted up to 1% of the dose into the eggs as unmetabolized diflubenzuron, but eggs from house flies contained much lower residues. Secretion of diflubenzuron into the egg and resulting toxicity to the developing embryo probably accounts for the sterility observed in the adults of several insect species exposed to this insecticide.

Descriptors/Keywords: STOMOXYS-CALCITRANS, MUSCA-DOMESTICA, INSECTICIDE, INSECTS, CARBON-14, DIMILIN, EXCRETION, RESISTANCE, METABOLISM, EMBRYO, STERILITY, EGG

Record - 579

IVIE, G. W. 1975. A PRELIMINARY REPORT ON THE METABOLIC FATE OF DIMILIN-14C IN A LACTATING COW. US AG. RESEARCH SVC. VETERINARY TOXICOLOGY AND ENTOMOL. RESEARCH LAB. UNPUBLISHED STUDY.

Record - 580

IVIE, G. W. 1975. METABOLISM OF DIMILIN 1-(2,6-DIFLUBENZOYL-3-(4-CHLOROPHENYL) UREA BY A LACTATING COW, AND FATE OF THE MAJOR METABOLITE IN RATS; US AG. RES. SVC., VETERINARY TOXICOLOGY AND ENTOMOL. RESEARCH LAB.. UNPUBLISHED STUDY. .

Record - 581

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Record - 582

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Record - 583

A NEW CLASS OF INSECTICIDAL DIHYDROPYRAZOLES

JACOBSON R M

CROMBIE, L. (ED.). ROYAL SOCIETY OF CHEMISTRY SPECIAL PUBLICATION, NO. 79. RECENT ADVANCES IN THE CHEMISTRY OF INSECT CONTROL; SECOND INTERNATIONAL SYMPOSIUM, OXFORD, ENGLAND, UK, JULY 17-19, 1989. XII+296P. ROYAL SOCIETY OF CHEMISTRY: CAMBRIDGE, ENGLAND, UK; CRC PRESS, INC.: BOCA RATON, FLORIDA, USA. ILLUSTRATIONS. PAPER. ISBN 0-85186-627-1. 0 (0). 1990. 206-211.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: DIFLUBENZURON, PH 60-40, PH 60-41, PH 60-42, RH3421, CHEMICAL SYNTHESIS, STRUCTURE-ACTIVITY RELATIONSHIPS

Record - 584

EVALUATION OF DIFLUBENZURON FOR THE CONTROL OF BIHAR INDIA HAIRY CATERPILLAR DIACRISIA OBLIQUA

JAIPAL S

TESTS AGROCHEM CULTIV 0 (6). 1985 . 20-21.

Full Journal Title: Tests of Agrochemicals and Cultivars

Language: ENGLISH

Descriptors/Keywords: CAJANUS-CAJAN, INDIA

Record - 585

JAKOB, W. L., A. R. STILES, AND D. A. ELLISON. 1974. DATA SUMMARY: EFFECTS OF TH-6040 ON MOSQUITOES AND NON-TARGET AQUATIC ORGANISMS. UNPUBLISHED STUDY INCLUDING PUBLISHED DATA, RECEIVED APR. 7, 1976 UNDER 148-1259; PREPARED IN COOPERATION WITH US

HEALTH SERVICES AND MENTAL HEALTH ADMN., CENTER FOR DISEASE CONTROL, MALARIA PROGRAM, TECHICAL DEVELOPMENT LABS AND OTHERS.

Record - 586

JAKOB, W. L. 1973. EVALUATION OF TH-6040 FOR THE CONTROL OF MOSQUITO, CULEX PIPENS AND AEDES. REPORT THOMPSON-HAYWARD CHEMICAL CO. NO. D8415.

Record - 587

JARRETT, P. 1985. BIOLOGY OF GREENHOUSE CATERPILLAR PESTS. BIOLOGY PEST CONTROL: THE GLASSHOUSE EXPERIENCE.; EDITED BY N.W. HUSSEY AND N. SCOPES. PP 99-103. POOLE, DORSET (ENGLAND): BLANDFORD, 1985.

Record - 588

FIELD EVALUATION OF DIFLUBENZURON AND CARBARYL BRAN BAITS AGAINST GRASSHOPPER ORTHOPTERA ACRIDIDAE POPULATIONS IN SOUTH DAKOTA

JECH L E; FOSTER R N; COLLETO D; WALGENBACH D D; ROLAND T J; RODRIGUEZ G D; BOHLS R; HOUSTON R D; MEEKS W K; ET AL

J ECON ENTOMOL 86 (2). 1993. 557-565.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Control of rangeland grasshoppers with flaky wheat bran treated with diflubenzuron and carbaryl was tested in South Dakota [USA] during 1988 and 1989. Diflubenzuron (0.75 or 1.0% [AI]/kg) was delivered at 1.1 and 22. kg/ha and carbaryl (2.0% [AI]/kg) at 1.1 kg/ha. In 1988 and 1989, diflubenzuron and carbaryl treatments were equally effective. The 2-yr (1988 + 1989) combined total population reductions range from 34.9 +/- 10.5% for the diflubenzuron 0.75% (AI)/kg applied at 1.1 kg/ha to 66.7 +/- 11.0% for the diflubenzuron 2.09% +/- 2.2 kg/ha. The standard carbaryl 2.0% AI/kg at 1.1 kg/ha was 57.9 +/- 6.0%. The variability between the applications at the two sites was caused mainly by the difference in prevailing weather patterns. Sublethal effects were noted for the effects of treatment on the average age of the grasshoppers. At Edgemont, SD, in 1989, five species of grasshoppers occurred in all before-treatment counts and were analyzed in detail. Two species, *Cordillacris occipitalis* (Thomas) and *Amphitornus coloradus* (Thomas), did feed on the bait and showed no mortality. *Aulocara elliotti* (Thomas) was controlled, but no significant difference among the treatments were detected. Diflubenzuron and carbaryl treatments significantly reduced populations of *Ageneotettix deorum* (Scudder) and *Phlibostroma quadrimaculatum* (Thomas). Observations 1 yr after treatments of these species revealed that *P. quadrimaculatum* and *A. deorum* continued to exhibit residual effects of treated bran.

Descriptors/Keywords: CORDILLACRIS-OCCIPITALIS, AMPHITORNUS-COLORADUS, AULOCARA-ELLIOTTI, AGENEOTETTIX-DEORUM, PHLIBOSTROMA-QUADRIMACULATUM, INSECT PESTS CONTROL, WEATHER, USA

Record - 589

ROLE OF METABOLISM IN EFFECTS OF DIFLUBENZURON ON GROWTH OF B16 MELANOMAS IN MICE

JENKINS V K; PERRY R R; AHMED A E; IVES K

INVEST NEW DRUGS 4 (4) 1986. 325-336.

Full Journal Title: Investigational New Drugs

Language: ENGLISH

ABSTRACT

The insect growth regulator diflubenzuron (DFB), which also inhibits growth of experimental tumors in mice, was studied to determine the influence of in vivo microsomal metabolism on its antitumor activity. DFB inhibits chitin synthesis and growth of imaginal epidermis in insects and suppresses melanogenesis and uptake of nucleosides in mouse melanoma cells, but the means of cell growth regulation and the role of metabolism of DFB in such regulation have not been established. Five daily injections of DBF (total of 4000 mg/kg) into C57BL/6 mice with B16 melanomas induced an acute 11-20% decrease in tumor volume and a 2-3 day increase in the initial tumor volume doubling time (Td), but at mid-treatment tumors regained maximum (control-like) rate of volume increase. Tumors in mice conditioned with a mixed function oxidase inhibitor (CoCl₂) and treated with DFB did not decrease in mean volume, but their rate of volume increase was reduced by about 75% and the Td was increased by 4.2 days. In contrast, induction of mixed function oxidase with 3-methylcholanthrene (3-MC) or beta-naphthoflavone (B-NF) enhanced the effects of DFB by a factor of 1.5 to 2.0. Therefore, aromatic hydroxylation of DFB may be required for tumor growth regulation. Three metabolites of DFB—two hydroxylated forms and a scission product, 4-chlorophenylurea (CPU), were also tested for tumor growth regulation. CPU was ineffective; a form oxidized at the 3 carbon of the phenyl ring (3-OH-DFB) was only marginally effective; but the 2-carbon form (2-OH-DFB) induced a 24% decrease in mean tumor volume and a 2.4 day increase in Td. Pretreatment with 3-MC and treatment with 2-OH-DFB also resulted in a 24% decrease in tumor volume and a 2.2 day increase in Td, but also reduced tumor volume increase to 20% between the 5th and 10th days after the initial 2-OH-DFB injection, compared to a 125% increase without 3-MC. Further, 3-MC pretreatment caused the otherwise marginally effective 3-OH-DFB to become almost as effective as 2-OH-DFB. These data support our previous report that DFB alters tumor growth and show that mixed function oxidase enhances effects of DFB, 2-OH-DFB and 3-OH-DFB.

Descriptors/Keywords: 3 METHYLCHOLANTHRENE, COBALT, CHLORIDE 4 CHLOROPHENYLUREA, BETA NAPHTHOFILAVONE, 2 HYDROXYDIFLUBENZURON, 3 HYDROXYDIFLUBENZURON, ANTINEOPLASTIC-DRUG, MIXED FUNCTION OXIDASE

Record - 590

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Record - 591

JENSEN, R. L. 1974. EVALUATION OF TH-6040 FOR THE CONTROL OF SOYBEAN LOOPER, PSEUDOPULSIA INCLUDENS, ON SOYBEANS. REPORT THOMPSON-HAYWARD CHEMICAL CO. NO. C3482.

Record - 592

TOXICITY OF DIFLUBENZURON TO NYMPHS OF THE DESERT LOCUST SCHISTOCERCA GREGARIA FORSK. ORTHOPTERA ACRIDIDAE

JEPSON P C; YEMANE A

MEETING OF THE PHYSICOCHEMICAL AND BIOPHYSICAL PANEL OF THE SCI PESTICIDES GROUP, LONDON, ENGLAND, UK, MARCH 26, 1991. PESTIC SCI 34 (1). 1992. 92-93.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: INSECT, INSECT GROWTH REGULATOR, INSECTICIDE, PESTICIDE, CHITIN SYNTHESIS INHIBITION, AGE, AGRICULTURAL PESTS

Record - 593

JESUDASAN, R. W. A., C. KANDASAMY, AND S. RAVIKUMAR. 1986. USE OF DIFLUBENZURON FOR THE CONTROL OF GROUNDNUT LEAF WEBBER APROAEREMA MODICELLA D. (GELECHIIDAE: LEPIDOPTERA). PESTOLOGY 10(1): 19-20.

Record -594

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Record - 595

JOHANSEN, C. A. 1977. PESTICIDES AND POLLINATORS. ANN. REV. ENTOMOL. 22: 177-192.

Record - 596

JOHANSEN, C. AND W. ROBINSON. 1977. IMPACT OF CHEMICAL CONTROL APPLICATIONS IN THE FOREST ON BENEFICIAL INSECTS. PROGRESS REPORT IV (US FOREST SERVICE, UNPUBLISHED STUDY).

Record - 597

JOHNSON, C. R. 1977. THE EFFECTS OF SUBACUTE CONCENTRATIONS OF THE INSECT GROWTH REGULATORS, DIMILIN AND METHOPRENE, ON THERMAL TOLERANCE BEHAVIOR IN THE MOSQUITOFISH GAMBUSIA AFFINIS. PROC. PAPER. ANNU. CONF. CALIF. MOSQ. CONTROL. ASSOC. 45TH . PP. 54-55.

Record - 598

JOHNSON, G. D. AND M. S. MULLA. 1982. SUPPRESSION OF NUISANCE AQUATIC MIDGES WITH A UREA INSECT GROWTH REGULATOR. J. OF ECON. ENTOMOL. 75 (2): 297-300.

Record - 599

CHEMICAL CONTROL OF AQUATIC NUISANCE MIDGES IN RESIDENTIAL RECREATIONAL LAKES

JOHNSON G D; MULLA M S

MOSQ NEWS 41 (3). 1981. 495-501.

Full Journal Title: Mosquito News

Language: ENGLISH

ABSTRACT

Chironomid midge larval densities were studied in Silver Lakes, [California, USA] from March-Nov., 1979. Midges of quantitative importance from March-May included species of Tanytarsus, Procladius and Chironomus. C. decorus and Procladius spp. were most prevalent from June-July with the former most abundant from Aug.-Nov. Chemical abatement measures included the O-P [organo-phosphate] insecticide, Abate, and 2 urea-type IGR [insect growth regulators], Dimilin and Bay SIR-8514. Applications of Abate at 0.28 kg AI[active ingredient]/ha eliminated Tanytarsus spp. from the benthic samples up to 2 wk posttreatment but had no effect on species of Procladius or Chironomus. Higher treatment rates, 0.33 kg AI/ha and 0.56 kg AI/ha, similarly had no effect on larval numbers of Procladius or Chironomus (mainly C. decorus). Dimilin and Bay SIR-8514 applied at rates of 0.11 and 0.28 kg AI/ha effectively suppressed adult emergence of species of Tanytarsus and Procladius for up to 2 wk posttreatment, but neither IGR was effective against the more pestiferous midge species C. decorus. Coinciding with the IGR treatments was a decline in larval numbers, suggesting that the

compounds possess larvicidal capabilities.

Descriptors/Keywords: TANYTARSUS, PROCLADIUS, CHIRONOMUS-DECORUS, CHIRONOMID MIDGE LARVA, ABATE INSECTICIDE, DIMILIN, BAY SIR-8514 INSECT GROWTH REGULATOR, LARVICIDE, CALIFORNIA USA

Record -600

JOHNSON, J. H. AND R. B. MOOR., 1975. EVALUATION OF DIMILIN AGAINST THE GYPSY MOTH AND EFFECT ON NON-TARGET ORGANISMS: THE EFFECTS OF DIMILIN ON FISH. REPORT USDA FOREST SERVICE.

Record - 601

JOHNSON, W. AND M. FINLE. 1980. HANDBOOK OF ACUTE TOXICITY OF CHEMICALS TO FISH AND AQUATIC INVERTEBRATES. USDI PUBLICATION 137, WASHINGTON, D. C.

Record - 602

BOLL WEEVIL EGG HATCH INHIBITION WITH 4 FORMULATIONS OF DIFLUBENZURON

JOHNSON W L; MOODY D S; LLOYD E P; TAFT H M

J ECON ENTOMOL 71 (2). 1978 179-180.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Four formulations of diflubenzuron containing 141.8 g AI[active ingredient]/ha (25% WP [wetable powder] in cottonseed oil; 39.8% flowable in Savol; 25% WP in Savol and water; and 25% WP in Sun Oil 7N and water) were applied by plane to 2 ha replicated plots of cotton in Mexico for control of *Anthonomus grandis* Boheman. All treatments were significantly different from the check and were highly effective in inhibiting boll weevil egg hatch. There were no significant differences in effectiveness among treatments.

Descriptors/Keywords: ANTHONOMUS-GRANDIS, COTTON, MEXICO, FORMULATIONS

Record - 603

JONES, A. S. AND J. N. KOCHENDERFER. 1988. PERSISTENCE OF DIFLUBENZURON (DIMILIN) IN A SMALL EASTERN WATERSHED AND ITS IMPACT ON INVERTEBRATES IN A HEADWATER STREAM. REPORT SOUTHEASTERN FOREST EXPERIMENT STATION. NO. 56637/26/1988.

Record - 604

JONES, A. S. AND J. N. KOCHENDERFER. 1986. PERSISTENCE OF DIFLUBENZURON (DIMILIN) IN A SMALL EASTERN WATERSHED AND ITS IMPACT ON INVERTEBRATES IN A HEADWATER STREAM. FORESTRY SCIENCE LABORATORY, RESEARCH TRIANGLE PARK, NC.

Record - 605

CAN INSECTICIDES BE INTEGRATED WITH BIOLOGICAL CONTROL AGENTS OF TRICHOPLUSIA NI IN CELERY?

JONES D; SNYDER M; GRANETT J

ENTOMOL EXP APPL 33 (3). 1983. 290-296.

Full Journal Title: Entomologia Experimentalis et Applicata

Language: ENGLISH

ABSTRACT

Several registered and experimental insecticides were tested on a celery pest and 1 of its important predators for selectivity in favor of predator survival. The 1st, 3rd and last instars of the cabbage looper, *t. ni* (Huebner) and the 2nd-instar and adult of the coccinellid predator *Hippodamia convergens* (Guerin-Meneville) were tested with residues of methomyl, demeton, fenvalerate, diflubenzuron and penfluron. These insect stages were also tested against diflubenzuron and penfluron in residue-ingestion experiments. The latter 2 insecticides, which are benzoylphenyl urea insect growth regulators [16R], offered the greatest selectivity. Adult predators suffered no acute toxic effects, while 2nd-instars approached equal tolerance with the most susceptible *T. ni* instars. Trends in populations of the pest and predator in celery fields indicated that predators were most abundant prior to the 1st marketable petiole, and that use of IGRs during this time would provide the greatest potential for integration of chemical and biological control.

Descriptors/Keywords: HIPPODAMIA-CONVERGENS, DIFLUBENZURON, PENFLURON, ORGANO PHOSPHATE, PREDATOR

Record - 606

LABORATORY STUDIES ON THE POTENTIAL OF 3 INSECT GROWTH REGULATORS FOR CONTROL OF THE TSETSE FLY GLOSSINA MORSITANS MORSITANS DIPTERA GLOSSINIDAE

JORDAN A M; TREWERN M A; BORKOVEC A B; DEMILO A B

BULL ENTOMOL RES 69 (1). 1979. 55-64.

Full Journal Title: Bulletin of Entomological Research

Language: ENGLISH

ABSTRACT

Experiments were carried out to determine the effects of the insect growth regulators (IGR), diflubenzuron and 2 of its analogs, on adult female *G. m. morsitans*. The most effective method of dosing was by topical application and less pronounced effects followed tarsal contact with treated surfaces and contact during mating with treated males. Compounds had no effect on female life span or the number of offspring produced, but following topical application at 0.5 .mu.g/female or above, most offspring produced throughout reproduction life (more than 100 days) failed to pupariate. Little difference was detected between the effects of the 3 IGR tested. Following the application of diflubenzuron to oviparous insects, egg hatch is inhibited. In the larviparous tsetse fly, such compounds may act by inhibiting chitin biosynthesis at pupariation time. IGR show promise as potential agents for *Glossina* control in the field. The quantities required would probably not exceed the insecticide quantities used in current operations against tsetse flies.

Descriptors/Keywords: DIFLUBENZURON, TOPICAL APPLICATION, LIFE SPAN, PUPARIATE, EGG HATCH, CHITIN BIOSYNTHESIS, INSECTICIDE

Record - 607

JORDAN, A. M. AND M. A. TREWERN. 1978. LARVICIDAL ACTIVITY OF DIFLUBENZURON IN THE TSETSE FLY GLOSSINA MORSITANS. NATURE 272: 719-720.

Record - 608

TOXICITY OF THE INSECT GROWTH REGULATOR DIFLUBENZURON TO FRESH WATER INVERTEBRATES AND FISHES

JULIN A M; SANDERS H O

MOSQ NEWS 38 (2). 1978 256-259.

Full Journal Title: Mosquito News

Language: ENGLISH

ABSTRACT

Technical grade material and wettable powder formulations of the insect growth regulator diflubenzuron and 3 of its degradation products were tested for toxicity to 3 spp. of aquatic invertebrates and 4 fishes: daphnids (*Daphnia magna*), scuds (*Gammarus pseudolimnaeus*), midges (*Chironomus plumosus*), rainbow trout (*Salmo gairdneri*), fathead minnows (*Pimephales promelas*), channel catfish (*Ictalurus punctatus*) and bluegills (*Lepomis macrochirus*). The acute toxicities of the wettable powder formulation of diflubenzuron ranged from a 48 h EC50 (estimated concentration immobilizing 50% of test organisms) of 0.015 mg/l for daphnids to a 96 h LC50 (estimated concentration producing 50% mortality) of 660 mg/l for bluegills. The 96 h LC50 of the technical grade material exceeded 100 mg/l for all 4 fishes. The most toxic degradation product, 4-chloroaniline, had a 96 h LC50 of 2.4 mg/l to bluegills and a 48 h EC50 of 43 mg/l to early 4-instar midge larvae. The 48 h EC50's (midge larvae) and 96 h LC50's for 3 of 4 spp. of fish for 4-chlorophenyl urea and 2,6-difluorobenzoic acid were greater than 100 mg/l.

Descriptors/Keywords: DAPHNIA-MAGNA, GAMMARUS-PSEUDOLIMNAEUS, CHIRONOMUS-PLUMOSUS, SALMO-GAIRDNERI, PIMEPHALES-PROMELAS, ICTALURUS-PUNCTATUS, LEPOMIS-MACROCHIRUS, DEGRADATION PRODUCTS, 4 CHLORO ANILINE, 4 CHLOROPHENYL UREA, 2 6 DI FLUORO BENZOIC-ACID

Record - 609

BENZOYLPHENYL UREAS STIMULATE HUMAN GRANULOCYTE-MONOCYTE PROGENITORS IN-VITRO IN THE ABSENCE OF EXOGENOUS GROWTH FACTORS

JUNEJA H S; JENKINS V K; IVES K L; LEE S

20TH ANNUAL MEETING OF THE INTERNATIONAL SOCIETY FOR EXPERIMENTAL HEMATOLOGY, PARMA, ITALY, JULY 21-25, 1991. EXP HEMATOL (N Y) 19 (6). 1991. 489.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: ABSTRACT, DIFLUBENZURON, CLANFENUR, HEMATOLOGIC-DRUG, ANTINEOPLASTIC AGENT, BONE MARROW, HYPOPLASIA, CANCER THERAPY

Record - 610

BACILLUS THURINGIENSIS BERLINGER AND SOME INSECTICIDES AGAINST THE DIAMOND-BACK MOTH PLUTELLA XYLOSTELLA L. ON CAULIFLOWER

JUSTIN C G L; RABINDRA R J; JAYARAJ S

J BIOL CONTROL 4 (1). 1990. 40-43.

Full Journal Title: Journal of Biological Control

Language: ENGLISH

ABSTRACT

In field trials on the control of the diamond-back moth, *Plutella xylostella* on cauliflower, *Bacillus thuringiensis* (BactospeineR) gave better control of the pest than all the chemical insecticides tested. Its combination with endosulfan, fenvalerate or diflubenzuron did not improve the efficacy of the pathogen. Yield was significantly higher in B. t.- treated plots in both the trials.

Descriptors/Keywords: ENDOSULFAN, FENVALERATE, DIFLUBENZURON, INSECTICIDES, BIOLOGICAL CONTROL, INTEGRATED CONTROL

Record - 611

KALBERER, P. AND E. VOGEL. 1978. EFFECTS OF ONE MICROGRAM OF TOPICALLY APPLIED DIFLUBENZURON ON TSETSE FLY GLOSSINA PALPALIS REPRODUCTION. J. ECON. ENTOMOL. 71: 620-621.

Record - 612

CONTROL OF SCIARIDS LYCORIELLA AURIPILA IN MUSHROOM CULTURES
AGARICUS BISPORUS BY DIFLUBENZURON IN THE CASING SOIL

KALBERER P; VOGEL E

Z PFLANZENKR PFLANZENSCHUTZ 85 (6). 1978. 328-333.

Full Journal Title: Zeitschrift fuer Pflanzenkrankheiten und Pflanzenschutz

Language: ENGLISH

ABSTRACT

The effectiveness of Dimilin 25WP against *L. auripila* and the influence of this insecticide on the crop yield of *A. bisporus* was investigated. The insecticide suspension was applied before mixing of the casing soil. Dimilin 25WP at 4 g/m² (1 g diflubenzuron)/m² of casing soil gave a good control of the pest in a black peat soil (thickness 6 cm). The same rate reduced crop yield by approximately 3%. The usefulness of diflubenzuron for sciarid control is discussed.

Descriptors/Keywords: DIMILIN 25-WP, INSECTICIDE, REDUCED CROP YIELD

Record - 613

THE INFLUENCE OF OXIDIZING AGENTS ON MACROMOLECULAR SYNTHESIS FOR
CHITINOUS MATERIAL

KALMUS G W; OAKLEY W E JR

INT J INVERTEBR REPROD DEV 14 (2-3). 1988. 205-210.

Full Journal Title: International Journal of Invertebrate Reproduction and Development

Language: ENGLISH

ABSTRACT

The 5th instar larvae of the common flour beetle, *Tribolium confusum*, was utilized as an invertebrate model to test the larvicidal potential of oxidizing agents used as flour preservatives. Larvae were exposed to 10 ppm of either diflubenzuron or benzoyl peroxide. Results showed decreases in both total protein and glucose concentrations. Histological examination also indicated smaller deposition of chitinous material in the endocuticle. Both treatments had similar effects. Thus, these data indicate that oxidizing agents mixed in flour may be used for the control of development of flour beetle larvae.

Descriptors/Keywords: TRIBOLIUM-CONFUSUM, DIFLUBENZURON, BENZOYL PEROXIDE, PROTEIN, GLUCOSE, ENDOCUTICLE

Record - 614

DIMILIN AN INSECTICIDE INTERFERING WITH CHITIN DEPOSITION

KANDASAMY C

PESTICIDES (BOMBAY) 21 (4). 1987. 9-10.

Full Journal Title: PESTICIDES (Bombay)

Language: ENGLISH

Descriptors/Keywords: AGRICULTURE CROP INDUSTRY

Record - 615

EFFECTS OF 1 MICROGRAM OF TOPICALLY APPLIED DIFLUBENZURON ON TSETSE FLY
REPRODUCTION

KAPLANIS J N; ELLIOTT J; TAHER M

J ECON ENTOMOL 71 (4). 1978 620-621.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

A single, 1 .mu.g topical application of diflubenzuron [N-(4-chlorophenyl)-N'-(2,6-difluorobenzoyl)-urea], to the venter of pregnant tsetse flies, *Glossina palpalis palpalis* (Robineau-Desvoidy), was nontoxic and did not interfere with ovarian development, embryogenesis, or egg hatch in utero. The compound exerted its effects on the extruded offspring and principally on the late larval ("prepupal") and puparial stages. The overall inhibition in development of progeny over 4 pregnancy cycles post-treatment for 2 different age groups of flies was 77 and 83%.

Descriptors/Keywords: GLOSSINA-PALPALIS-PALPALIS, N-4 CHLOROPHENYL-N-2 6-DIFLUOROBENZOYL UREA, PREGNANCY, CYCLES, EMBRYOGENESIS, DEVELOPMENT INHIBITION

Record - 616

CHITIN SYNTHESIS IN HELIOTHIS ZEA PUPAE AND INHIBITION BY CHITIN SYNTHESIS INHIBITORS

KASKA H M; MAYER R T; SOWA B A; MEOLA R W; COPPAGE D L

SOUTHWEST ENTOMOL 5 (3). 1980. 139-143.

Full Journal Title: Southwestern Entomologist

Language: ENGLISH

ABSTRACT

Chitin synthesis in *H. zea* (Boddie) was determined by measuring in vitro incorporation of ¹⁴C-labeled N-acetyl-D-glucosamine during pharate adult development. Two periods of chitin synthesis were observed, both associated with increases in total chitin content of the cuticle. The 1st period was of short duration, peaking at 3 h after larval-pupal ecdysis and lasting 1-2 h. The 2nd period of synthesis activity occurred from days 5-11 postecdysis, peaking at day 10. Two chitin synthesis inhibitors, diflubenzuron and Polyoxin D, were assayed in vitro for their effect on precursor incorporation on day 8. Addition of these compounds to the incubation media resulted in a 75% reduction in precursor incorporation.

Descriptors/Keywords: CARBON-14 LABELED, N ACETYL-D GLUCOSAMINE, PHARATE ADULT, ECDYSIS, DIFLUBENZURON, POLYOXIN D

Record -617

KAUFFMAN, E. E. 1976. COPY OF FIELD EVALUATION REPORT ON MOSQUITOES FOR ADDITIONAL INFORMATION. REPORT THOMPSON-HAYWARD CHEMICAL CO. NO. C3962.

Record -618

KAUFFMAN, E. E. 1975. AIRCRAFT APPLIED DIMILIN W-25 FOR THE CONTROL OF PASTURE AEDES MOSQUITO LARVAE AND EFFECTS ON VARIOUS NON-TARGET ORGANISMS IN THE SUTTER-YUBA MAD.; REPORT THOMPSON-HAYWARD CHEMICAL CO. NO. C3690.

Record - 619

EVALUATION OF LARVICIDAL POTENCY OF INSECT GROWTH REGULATOR 2-1 METHYL-2-4-PHENOXYPHENOXYETHOXYPYRIDINE AGAINST THE HOUSEFLY MUSCA DOMESTICA

KAWADA H; DOHARA K; SHINJO G

JPN J SANIT ZOOL 38 (4). 1987. 317-322.

Full Journal Title: Japanese Journal of Sanitary Zoology

Language: ENGLISH

ABSTRACT

The newly synthesized pyridyl ether compound 2-[1-methyl-2-(4-phenoxyphen oxy)ethoxy]pyridine (S-31183), which acts as a juvenile hormone, was evaluated for larvicidal potency against the larvae of six strains of the housefly, *Musca domestica*. S-31183 showed higher larvicidal activity against pyrethroid and organophosphorus resistant houseflies than methoprene or diflubenzuron in the laboratory, and showed promising results under the semi-field conditions.

Descriptors/Keywords: JUVENILE HORMONE MIMIC, INSECTICIDE RESISTANCE, PYRETHROID, ORGANOPHOSPHORUS, METHOPRENE, DIFLUBENZURON

Record - 620

KEET, C. M. J. F. 1983. REVIEW OF RELEVANT TOXICITY DATA OF DIFLUBENZURON AND ITS FORMULATION, DIMILIN WP-25, IN RELATION TO EXPOSURE OF FIELD PERSONNEL; REPORT DUPHAR B.V. NO. 56645/35/1983.

Record - 621

KEET, C. M. J. F., A. KEMP, AND W. MAAS. 1983. EFFECTS OF DIFLUBENZURON ON MATHAEMOGLOBIN AND SULPHHAEMOGLOBIN LEVELS AND OTHER RED BLOOD CELL RELATED PARAMETERS IN MICE, RATS, CATS, DOGS, AND SHEEP. PAPER ENVIRONMENTAL HAZARDS OF AGRICHEMICALS IN DEVELOPING COUNTRIES.

Record - 622

KEET, C. 1976. EFFECTS OF DU 112307 (TECHNICAL) AFTER DIETARY ADMINISTRATION OF MALE HUBBARD BROILER CHICKENS FOR 14 WEEKS: REPORT #56645/25/76. RECEIVED 6/22/77 UNDER PP 6F 1773 (NO OTHER REFERENCE DATA AVAILABLE).

Record - 623

EFFECTS OF DIFLUBENZURON DIMILIN ON SELECTED BENEFICIAL ARTHROPODS IN COTTON FIELDS

KEEVER D W; BRADLEY J R JR; GANYARD M C

ENVIRON ENTOMOL 6 (5). 1977 732-736.

Full Journal Title: Environmental Entomology

Language: ENGLISH

ABSTRACT

Populations of the arthropod predators, *Geocoris punctipes* (Say), *Nabis* spp., *Hippodamia convergens* Guerin, *Coleomegilla maculata* (DeGeer), *Orius insidiosus* (Say), *Chrysopa* spp. and *Araneida* were monitored in cotton fields treated with diflubenzuron, in cotton fields treated with conventional insecticides, and in cotton fields to which no insecticides were applied. *G. punctipes* and *H. convergens* were taken from both diflubenzuron-treated and untreated fields to the laboratory to study oviposition and egg hatch. With the exception of *G. punctipes*, reduction of predator populations in diflubenzuron-treated fields vs. untreated fields was not significant. This was in marked contrast to the highly adverse effects of conventional insecticides upon the predator populations. For 6 days after collection, egg hatch in laboratory-held *H. convergens* was significantly lower in females collected from diflubenzuron-treated cotton fields than in those from untreated fields. Additional differences in fecundity were not detected in the laboratory studies.

Descriptors/Keywords: GEOCORIS-PUNCTIPES, NABIS-SPP, HIPPODAMIA-CONVERGENS, COLEOMEGILLA-MACULATA, ORIUS-INSIDIOSUS, CHRYSOPA-SPP, ARANEIDA PREDATORS, INSECTICIDES, FECUNDITY

RESISTANCE RISK ASSESSMENT OF TWO INSECT DEVELOPMENT INHIBITORS
DIFLUBENZURON AND CYROMAZINE FOR CONTROL OF THE HOUSEFLY MUSCA DOMESTICA L.
PART II. EFFECT OF SELECTION PRESSURE IN LABORATORY AND FIELD POPULATIONS

KEIDING J; EL-KHODARY A S; JESPERSEN J B

PESTIC SCI 35 (1). 1992. 27-37.

Full Journal Title: Pesticide Science

Language: ENGLISH

ABSTRACT

Laboratory selection with diflubenzuron (DFB) and cyromazine (CYR) was carried out with strains of houseflies collected on Danish farms. The adult flies were multiresistant to organophosphorus, carbamate and pyrethroid insecticides. Susceptibility to the larvicidal effect of DFB or CYR was monitored on Danish farms where fly control with DFB or CYR had been carried out for one to nine years. On these farms the fly population continued during the winter, but at a low level. Four strains were selected with DFB in seven out of 13-18 laboratory generations. The selections varied from 56% to 94% mortality. The strains showed 1-5 times increase of LC50 and LC95 to DFB. The larvicidal effect of DFB was monitored on five farms where treatment of fly breeding sources in manure (1 g DFB m⁻²) was carried out regularly for one to nine fly seasons. On none of the farms was any general increase of tolerance to DFB found. Resistance ratios (R/S) compared to the WHO Standard Reference Strain ranged from 0.8 to 2.0 at LC50 and from 1.0 to 2.9 at LC95. Two strains were selected with CYR in five or six out of 13 laboratory generations. The selections varied from 62 to 97% mortality. The strains showed no increase of LC50 or LC95. The larvicidal effect of CYR was monitored on three farms where housefly breeding places in the animal houses were treated with CYR (0.5 g m⁻²) for two fly seasons. No reduction of susceptibility to CYR was found and the R/S was 0.7 to 0.9. The effect of DFB or CYR selection pressure is compared with other investigations and discussed. Moderate to high resistance to DFB or CYR can develop in housefly populations if the selection pressure is strong, especially when used as feed-through applications on poultry farms where all feed contains DFB or CYR. If the treatment of flybreeding sources is less complete, resistance problems may not develop.

Descriptors/Keywords: INSECT, POULTRY INDUSTRY, LIVESTOCK INDUSTRY, PEST CONTROL, INSECTICIDE RESISTANCE, MORTALITY

RESISTANCE RISK ASSESSMENT OF TWO INSECT DEVELOPMENT INHIBITORS
DIFLUBENZURON AND CYROMAZINE FOR CONTROL OF THE HOUSEFLY MUSCA DOMESTICA PART
I. LARVICIDAL TESTS WITH INSECTICIDE-RESISTANT LABORATORY AND DANISH FIELD
POPULATIONS

KEIDING J; JESPERSEN J B; EL-KHODARY A S

PESTIC SCI 32 (2). 1991. 187-206.

Full Journal Title: Pesticide Science

Language: ENGLISH

ABSTRACT

Larvicide tests with diflubenzuron (DFB) and cyromazine (CYR) were carried out against 15 laboratory housefly strains and 89 field strains collected from 87 Danish and 2 Swedish farms, 1975-89. The strains represented a wide range of adult insecticide resistance and R-mechanisms. The larvicide tests were done by treating larval medium with serial or discriminating dosages of the larvicide, seeding it with eggs and calculating the mortality during development to adults. The WHO susceptible strain (S) was used as a reference. Dose-response tests with DFB gave resistance ratios (R/S) from 1.1 to 4.1 at LC50 and 0.3 to 3.4 at LC95 and, with CYR, R/S from 0.6 to 1.8 at LC50 and 0.6 to 2.9 at LC95. It was concluded that the relatively small variation in susceptibility between strains was not generally correlated with resistance in adult flies to organophosphorus, pyrethroid or other conventional insecticides (neurotoxins). Tests with discriminating dosages of DFB (59 farms) and CYR (63 farms)

showed no indication of resistance to either product. The results of investigations by other workers on the relation between resistance to DFB or CYR and resistance to conventional insecticides are discussed.

Descriptors/Keywords: INSECTICIDE, AGRICHEMICAL, MORTALITY, CALCULATION, MATHEMATICAL MODEL, AGRICULTURE

Record - 626

A COMPARISON OF THE JUVENILIZING EFFECT OF 6 JUVENILE HORMONE-LIKE ACTIVITY COMPOUNDS ON EGYPTIAN CULEX PIPPIENS

KELADA N L; GAABOUB I A; RAWASH I A

J AGRIC SCI 95 (1). 1980. 203-212.

Full Journal Title: Journal of Agricultural Science

Language: ENGLISH

ABSTRACT

Tests were made to determine the juvenilizing effects of TH6040, JH-25, Altosid, Altozar, ZR-777 and ZR-619 on *C. pipiens* L. using the IC50 value (dose to inhibit the emergence of 50% of adults) as a criterion. The descending order of activity was Altosid, TH6040, Altozar, ZR-777, JH-25 and ZR-619. Insignificant prolongations were recorded in the larval or pupal durations except in the case of TH6040 (Dimilin). The time lapse from larval treatment (early 4th instar) to adult emergence was prolonged by .apprx. 18.7% following treatment with 0.0001-0.1 .mu.g/ml. Juvenilizing effects of the tested compounds applied to the early 4th instar extended to the adult stage of *C. pipiens* L. and affected the duration of the 1st gonotrophic cycle. The concentrations of TH6040, JH-25, Altosid, Altozar, ZR-777 and ZR-619 tested caused prolongation of the time between emergence and 1st oviposition by .apprx. 20-50% (at 0.0001-0.1 .mu.g/ml), 3-26% (at 0.001-5 .mu.g/ml), 0-15% (at 0.1 .times. 10-8-0.001 mu.g/ml), 3-23% (at 0.1 .times. 10-8-0.001 .mu.g/ml), 9-27% (at 0.1 .times. 10-7-0.01 .mu.g/ml) and 11-32% (at 0.1 .times. 10-7-0.01 .mu.g/ml), respectively. The sex ratio of *C. pipiens* L. changed progressively in all treatments but with an inconsistent trend according to the concentration of each compound. This conclusion provides evidence on the effect of juvenile hormone-like activity compounds on adults emerging from treated larvae. The numbers of females produced were increased by .apprx. 15-30%, 9-27%, 1-35%, 1-38%, 6-44% and 31-71% after treatment with 0.0001-0.1 .mu.g TH6040, 0.001-5 .mu.g JH-25, 0.1 .times. 10-8-0.001 .mu.g Altosid, 0.1 .times. 10-8-0.001 .mu.g Altozar, 0.1 .times. 10-7-0.01 .mu.g ZR-777 and 0.01 .times. 10-7-0.01 .mu.g ZR-619/ml, respectively.

Descriptors/Keywords: DIMILIN, TH-6040, JH-25, ALTOSID, ALTOZAR, ZR-777, ZR-619, MEDIAN, EMERGENCE, INHIBITION, GONOTROPHIC CYCLE, OVIPOSITION, LARVA, PUPA, INSTAR, SEX RATIO

Record - 627

KELLER, S. 1978. INVESTIGATIONS ON THE INFLUENCE OF DIMILIN (DIFLUBENZURON) ON GROWTH AND GERMINATION OF CONIDIA OF SOME INSECT PATHOGENIC FUNGI. ANZ. SCHADLINGSKD PFLANZENSCHUTZ UMWELTSCHUTZ 52 (6): 81-83.

Record - 628

KER, R. F. 1977. INVESTIGATION OF LOCUST CUTICULE USING THE INSECTICIDE DIFLUBENZURON (SCHISTOCERCA GREGARIA). J. INSECT PHYSIO. 23(1): 39-48. IK NO. 77-9044154.

Record - 629

KHALIL, F. A., W. M. WATSON, AND M. W. GUIRGUS. 1983. EVALUATION OF DIMILIN AND ITS COMBINATIONS WITH DIFFERENT INSECTICIDES AGAINST SOME COTTON PESTS IN EGYPT. BULL. OF ENTOMOL. SOC. OF EGYPT, ECONOMIC SERIES. MAR. 1983. (11) PP. 71-76.

Record - 630

KHALIL, M. 1977. HYDROLYTIC CONSISTENCY OF DIFLUBENZURON AND 4-CHLOROPHENYLUREA WITH 3.6M HYDROCHLORIC ACID: RESEARCH REPORT NO. SR-11; UNPUBLISHED STUDY RECEIVED APR. 30, 1981 UNDER 148-1268; SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 631

KHALIL, M. 1977. TIME STUDY FOR THE HYDROLYSIS OF DIFLUBENZURON WITH 3.6M HYDROCHLORIC ACID: RESEARCH REPORT NO. SR-15; UNPUBLISHED STUDY RECEIVED APR. 30, 1981. UNDER 148-1268; SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 632

CHEMICAL CONTROL OF MELON FRUIT FLY MYIOPARDALIS PARDALINA

KHAN S; CHUGHTAI G H; QAMAR-UL-ISLAM

PAK J AGRIC RES 5 (1). 1984. 40-42.

Full Journal Title: Pakistan Journal of Agricultural Research

Language: ENGLISH

ABSTRACT

Field tests were conducted to compare the effects on the infestation of musk melon by the larvae of *M. pardalina* Bigot with straight-spray, bait-spray and granular application. Of Tamaron, E.P.N. [dichlofenthion], Sumicidin, Dimilin and Padan in straight-spray, and bait-spray, each applied at the rate of 600, 810, 525, 75 and 1200 g (a.i.[active ingredient])/ha, respectively, at 10 days interval, Tamaron and E.P.N. gave significantly better control followed by Padan, Sumicidin and Dimilin. In granule application, of Thimet, Fundal, Marshal, Dacamox and Miral, each applied at the rate of 1800, 900, 540, 900 and 900 g (a.i)/ha, respectively, Thimet and Fundal gave significantly better control followed by Miral, Marshal and Dacamox.

Descriptors/Keywords: GRANULAR BAIT, SPRAY INSECTICIDES, TAMARON, SUMICIDIN, DIMILIN, PADAN, THIMET, FUNDAL, MARSHAL, DACAMOX, MIRAL, DICHLOFENTHION

Record - 633

THE EFFECT OF DIFLUBENZURON ON THE EGG MASSES OF MELOIDOGYNE INCOGNITA

KHERA S; MITTAL P K; SURINDER

INDIAN J NEMATOL 17 (1). 1987. 46-48.

Full Journal Title: Indian Journal of Nematology

Language: ENGLISH

ABSTRACT

Egg masses of *Meloidogyne incognita* were dipped in 0 (control), 0.025, 0.05, 0.1, 1, 2 and 5 ppm of diflubenzuron for 24 h and thereafter allowed to hatch in distilled water. The number of larvae hatched and those which subsequently died were counted from 1st to 6th day. It was observed that the larvicidal action increased with the increase of dose.

Descriptors/Keywords: CROP PEST, LARVAL MORTALITY, HATCHING

Record - 634

MULTIPLE PROGENY PRODUCTION BY GYPSY MOTH PARASITES BRACHYMERIA-SPP
HYMENOPTERA CHALCIDIDAE FOLLOWING EXPOSURE TO DIFLUBENZURON

KHOO B K; FORGASH A J; RESPICIO N C; RAMASWAMY S B

ENVIRON ENTOMOL 14 (6). 1985. 820-825.

Full Journal Title: Environmental Entomology

Language: ENGLISH

ABSTRACT

Topical treatment of adult *Brachymeria intermedia* (Nees), a pupal parasite of *Lymantria dispar* (L.), with 2 or 4 .mu.g of the chitin synthesis inhibitor diflubenzuron resulted in the production of multiple progeny (up to 14) within a single host, whereasthere is normally only one offspring per host pupa. Only females needed to be treated to obtain the effect. Similar results were obtained with *B. lasus* (Walker). A single treatment lasted up to 3 weeks. Some malformed progeny were produced, and not all progeny survived to maturity or emerged successfully. Although there was considerable variation in the size of F1 adults, they produced normal progeny at the rate of one offspring per host.

Descriptors/Keywords: BRACHYMERIA-LASUS, BRACHYMERIA-INTERMEDIA, LYMANTRIA-DISPAR, INSECT GROWTH REGULATOR, NONTARGET ORGANISM

Record - 635

EFFECTS OF DIFLUBENZURON ON LONGEVITY AND REPRODUCTION OF
RIPTORTUS CLAVATUS HEMIPTERA ALYDIDAE

KIM G-H; AHN Y-J; CHO K-Y

J ECON ENTOMOL 85 (3). 1992. 664-668.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Laboratory studies were done to determine the effects of diflubenzuron on the longevity and reproduction of adult bean bugs, *Riptortus clavatus* (Thunberg). Irrespective of adult age at the time of topical application, the number of eggs laid per female was decreased to 0-26.1% of the untreated controls by treatment with 1.0 .mu.g of diflubenzuron and to 7.6-58.3% by treatment with 0.01 .mu.g. Treatment of adults within 3 h of emergence significantly reduced not only adult longevity and the number of eggs laid per female but also adversely affected the period before oviposition and ovarian development. When newly emerged adults were treated with higher dosages of diflubenzuron, considerable adverse effects were apparent. We conclude that significant reduction in egg production by adults treated with diflubenzuron may be caused by the inhibition of ovarian development of the adult bugs.

Descriptors/Keywords: INSECT, BEAN CROP PESTS ,PLANT, OVARIAN DEVELOPMENT, INHIBITION, INSECTICIDE

Record - 636

KINGSBURY, P, K. M. S. SUNDARAM, AND S. HOLMES. 1987 "AQUATIC FATE AND IMPACT STUDIES WITH DIMILIN", CANADIAN FORESTRY SERVICE, ONTARIO.

Record - 637

ANOPHELES MALARIA VECTOR AND CONTROL MEASURES APPLIED IN INDONESIA

KIRNOWARDOYO S

SOUTHEAST ASIAN J TROP MED PUBLIC HEALTH 19 (4). 1988. 713-716.

Full Journal Title: Southeast Asian Journal of Tropical Medicine and Public Health

Language: ENGLISH

Descriptors/Keywords: ANOPHELES-PUNCTULATUS, ANOPHELES-FARAUTI, ANOPHELES-BALABACENSIS, DIFLUBENZURON, DIMILIN, DDT, INSECTICIDE

Record -638

MEMBRANE BINDING AND UPTAKE OF DIFLUBENZURON IN A CELL LINE FROM MANDUCA SEXTA L

KLITSCHKA G E; WITT W; MAYER R T

ARCH INSECT BIOCHEM PHYSIOL 4 (3). 1987. 169-182.

Full Journal Title: Archives of Insect Biochemistry and Physiology

Language: ENGLISH

ABSTRACT

The binding and accumulation of the chitin synthesis inhibitor diflubenzuron (DFB) by a cell line derived from embryonic tissue of the tobacco hornworm, *Manduca sexta* (L.), was analyzed. A rapid and reversible binding to viable and nonviable cells suspended in the culture medium was observed at soluble concentrations of DFB for short exposure periods. Scatchard analysis gave no indication of a saturable uptake mechanism. The DFB-binding capacity of intact cells was found to be similar to that of a crude membrane preparation (70,000g pellet); however, plasma membrane-enriched fractions bound almost three times as much DFB as the homogenate. Repetitive short-time incubations (up to 3 h) of suspended cells with DFB resulted in a stepwise intracellular accumulation of DFB. Treatment of growing cells with DFB at high concentration (50 μ M) of DFB for longer periods (up to 7 days) resulted in elevated intracellular accumulation of DFB, which exceeded the binding capacity of the cell membranes and the aqueous solubility of DFB. These results indicate that the intracellular crystals detected by transmission electron microscopy are precipitated DFB. No metabolites or other chemically modified products to intracellular DFB were detected by high pressure liquid chromatography (HPLC) after a 7-day incubation.

Descriptors/Keywords: EMBRYONIC TISSUE, INSECT GROWTH REGULATOR

Record - 639

EFFECTS OF CHITIN SYNTHESIS INHIBITORS ON INCORPORATION OF NUCLEOSIDES INTO DNA AND RNA IN A CELL LINE FROM MANDUCA SEXTA

KLITSCHKA G E; MAYER R T; DROLESKEY R E; NORMAN J O; CHEN A C

TOXICOLOGY 39 (3). 1986. 307-316.

Full Journal Title: Toxicology

Language: ENGLISH

ABSTRACT

Five putative chitin synthesis inhibitors (CSI) were tested to determine if they inhibited nucleoside incorporation into acid precipitable material in a cell line from *Manduca sexta* (L.). The results varied. Diflubenzuron (DFB) (100 μ M) inhibited cytidine incorporation by 38%; EL-494 (100 μ M) inhibited adenosine incorporation by 43%; Bay Sir 8514 (100 μ M) inhibited uridine incorporation by 24%. Superdiflubenzuron (100 μ M) was the worst inhibitor overall (18-22%) for the benzoylphenyl urea CSI. The triazine CSI, CGA 19255, was the best inhibitor tested with 60% inhibition for cytidine and 49% for adenosine incorporation into DNA and RNA. Examination of cells incubated with diflubenzuron by scanning electron microscopy revealed distinct external morphological changes. Transmission electron microscopy showed that crystalline structures accumulated in the cytoplasm of cells treated with CFB. The crystalline structures were assumed to be diflubenzuron and they persisted even after diflubenzuron was removed from the medium.

Descriptors/Keywords: DIFLUBENZURON, ELECTRON MICROSCOPY

Record - 640

LARVICIDAL COMPOSITIONS EMPLOYING DIFLUBENZURON US PATENT-4764511. AUGUST 16 1988

KLOTHEN I

Patent Assignee: AMERICAN CYANAMID COMPANY.

OFF GAZ U S PAT TRADEMARK OFF PAT 1093 (3). 1988. 1370.

Full Journal Title: Official Gazette of the United States Patent and Trademark Office Patents

Language: ENGLISH

Document Type: PATENT

Descriptors/Keywords: USCL-514-594, ANIMAL FEED SUPPLEMENT, FEED INDUSTRY

Record - 641

CONGENITALLY INDUCED MORTALITY IN FACE FLIES MUSCA AUTUMNALIS DIPTERA MUSCIDAE FOLLOWING ADULT EXPOSURE TO DIFLUBENZURON TREATED SURFACES

KNAPP F W; HERALD F

J MED ENTOMOL 19 (2). 1982. 191-194.

Full Journal Title: Journal of Medical Entomology

Language: ENGLISH

ABSTRACT

Exposure of adult face flies (4-6 h old) to diflubenzuron-treated surfaces for intervals ranging from 0.25-16 h had a greater effect on larval mortality than on percentage egg hatch. F1 generation larval mortality was dependent upon diflubenzuron concentration, length of exposure and age of the flies. Variation in egg hatch in response to diflubenzuron at different concentrations was negligible, but greater exposure time decreased the percentage hatch. As the flies aged the percentage egg hatch increased. Although larval mortality and reduced egg hatch were demonstrated when either sex of the mating pair was exposed to diflubenzuron-treated surfaces, greater effects were observed when both male and female flies in the mating pairs were exposed.

Descriptors/Keywords: EGG HATCH, AGE

Record - 642

KNAPP, F. W. AND C. NONTAPAN. 1980. ENCAPSULATION OF DIMILIN AND ITS EFFECT ON INSECTICIDAL ACTIVITY AGAINST AEDES AEGYPTI (L.) AND MUSCA AUTUMNALIS: CONTROLLED RELEASE OF BIOACTIVE MATERIAL: BASED ON THE SYMPOSIUM HELD AT THE 6TH INT'L MEETING OF THE CONTROLLED RELEASE SOC. IN NEW ORLEANS, LA. AUG. 1979. EDITED BY RICHARD BAKER. PP. 267-315. NEW YORK: ACADEMIC PRESS. 1980.

Record - 643

COMPARATIVE TOXICITIES OF SELECTED PESTICIDES TO BULB MITE ACARI ACARIDAE AND TWOSPOTTED SPIDER MITE ACARI TETRANYCHIDAE

KNOWLES C O; ERRAMPALLI D D; EL-SAYED G N

J ECON ENTOMOL 81 (6). 1988. 1586-1591.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

The toxicities of 64 insecticides and acaricides belonging to several different chemical classes to the bulb mite, *Rhizoglyphus echinopus* (Fumouze and Robin), were examined with a contact-dip method. Results were compared with those obtained with many of the same compounds and the twospotted spider mite, *Tetranychus urticae* Koch, with the slide-dip method. Bulb mites generally were much more tolerant to the pesticides than were twospotted spider mites. Only 15 of 20 organophosphates and 6 of 8 carbamates had LC50's < 1,000 ppm for bulb mites after 72 h. Thus, the remaining

organophosphates and carbamates and the 9 pyrethroids, 6 organochlorines, 4 formamidines, 14 specific acaricides, diflubenzuron, nicotine, and abamectin were inactive. Of the 49 compounds tested against twospotted spider mites, LC50's < 1,000 ppm after 48 h were obtained for all compounds except 6 organophosphates, 2 carbamates, endosulfan, and 2 specific acaricides. This marked difference in the pesticide susceptibility profile between these two herbivorous mite species suggests that major differences between these organisms may exist at the biochemical level.

Descriptors/Keywords: RHIZOGLYPHUS-ECHINOPUS, TETRANYCHUS-URTICAE, FORMAMIDINES, ORGANOPHOSPHATES, CARBAMATES, PYRETHROIDS, ORGANOCHLORINES, INSECTICIDE, ACARICIDE, AGRICULTURE PESTS, DIFLUBENZURON, NICOTINE, ABAMECTIN, ENDOSULFAN

Record - 644

FATE OF DIFLUBENZURON IN SOUTHWESTERN CORN BORER LARVAE
DIATRAEA GRANDIOSELLA LEPIDOPTERA PYRALIDAE

KNOWLES C O; GAYEN A K

J ECON ENTOMOL 75 (5). 1982. 833-836.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

The penetration and metabolism of diflubenzuron were examined in nondiapausing (NDL) and diapausing (EIL) larvae of *D. grandiosella* (Dyar). Penetration of diflubenzuron into NDL was about twice that of EIL, with times for 50% disappearance of topically applied radiocarbon of 360 and 744 min, respectively. Both NDL and EIL degraded diflubenzuron; only 56% of the injected dose was the parent compound by 16 h. The major metabolite in the organic extract at 16 h was 4-chloraniline, comprising 21 and 30% of the dose in NDL and EIL, respectively. Other metabolites isolated from both larval types included N-[[[(4-chloro-2-hydroxyphenyl)amino]carbonyl]2,6-difluorobenzamide, N-[[[(4-chloro-3-hydroxyphenyl)amino]carbonyl]-2,6-difluorobenzamide, 2,6-difluorobenzamide, 2,6-difluorobenzoic acid, and 4-chlorophenylurea. Unidentified radiocarbon, probably conjugates, was present in the aqueous extract; this material comprised 9% in NDL and 3% in EIL at 16 h. Degradation of diflubenzuron by *D. grandiosella* was appreciably greater than that reported for other lepidopterans.

Descriptors/Keywords: 2 6 DI FLUORO BENZAMIDE, 2 6 DI FLUORO BENZOIC-ACID, 4 CHLOROPHENYL UREA, 4 CHLORO ANILINE, N-4 CHLORO-2-HYDROXYPHENYLAMINOCARBONYL-2 6-DIFLUORO BENZAMIDE, N-4 CHLORO-3-HYDROXYPHENYLAMINOCARBONYL-2 6-DIFLUORO BENZAMIDE, RADIO CARBON

Record - 645

THE USE OF MODIFIED MOBILE PHASES IN SFC EFFECTS ON THE RETENTION AND STABILITY OF SELECTED PESTICIDES

KNOWLES D E; RICHTER B E

HRC (J HIGH RESOLUT CHROMATOGR) 14 (10). 1991. 689-691.

Full Journal Title: HRC (Journal of High Resolution Chromatography)

Language: ENGLISH

Descriptors/Keywords: ALDICARB, METHOMYL, DIFLUBENZURON, PHENMEDIPHAM, SUPERCRITICAL FLUID, CHROMATOGRAPHY METHOD, APPLICATION

Record - 646

HISTOPATHOLOGICAL EFFECTS OF DIFLUBENZURON ON CUTICLE OF MOSQUITO

CULEX PIPIENS FATIGANS DIPTERA CULICIDAE

KOHLI V K; MITTAL P K

ANN BIOL (LUDHIANA) 1 (2). 1985. 216-219.

Full Journal Title: Annals of Biology (Ludhiana)

Language: ENGLISH

Descriptors/Keywords: ACID, MUCOPOLYSACCHARIDE PROTEIN, CHITIN, LIPID, NUCLEIC-ACID, INSECT GROWTH REGULATOR

Record - 647

KOLBE, H. AND I. HARTWIG. 1982. INVESTIGATIONS ON THE REDUCTION OF HATCHING RATE OF HYLOBIUS ABIETIS EGGS BY THE CHITIN SYNTHESIS INHIBITORS BAYER SIR 8514 AND DIMILIN 25 WP (INSECT PEST OF CROPS). JOURNAL OF PLANT DISEASES AND PROTECTION. 89(12): 715-719.

Record - 648

EFFECTIVENESS OF INSECTICIDES IN THE CONTROL OF CODLING MOTH
CYDIA POMONELLA L. LEPIDOPTERA TORTRICIDAE WITH SPECIAL REFERENCE TO
ACYLUREAS

KOSLINSKA M; NOWAKOWSKI Z

FRUIT SCI REP (SKIERNIEWICE) 15 (4). 1988. 193-198.

Full Journal Title: Fruit Science Reports (Skierniewice)

Language: ENGLISH

ABSTRACT

In two field experiments on codling moth control the effectiveness of 4 acylurea compounds were compared to those of 9 preparations belonging to four other chemical groups. One (1984) or three (1985) sprays per season were applied on the dates recommended for the standard insecticides. The effectiveness of the acylurea preparations containing triflumuron, teflubenzuron and diflubenzuron were lower, but in most cases did not differ significantly from those of organophosphorous compounds, synthetic pyrethroids and other ones. Their effectiveness were comparable to those of phosalone (standard preparation) and a multiple preparation containing permethrine, tetramethrine and piperonyl butoxide, and also to some extent with the effectiveness of cyhalotryne and ethofenprox. Only esfenvalerate and methamidophos (produced by the Bayer company) proved significantly better than the acylurea compounds. The effectiveness of chlorfluazuron, the fourth acylurea compound, was minimal.

Descriptors/Keywords: APPLE YIELD LOSS, TRIFLUMURON, TEFLUBENZURON, DIFLUBENZURON, PERMETHRIN, TETRAMETHRIN, PIPERONYL BUTOXIDE, CHLORFLUAZURON

Record -649

KOSTINA, M. N. A. A. ODINETS, I. N. ARTIUKHINA, N. G. HEL'NOLOVA, AND T. A. BOREIKO. 1987. FEASIBILITY OF THE COMBINES USE OF THE CHEMOSTERILIZING AGENT DIAMATIPH AND THE GROWTH INHIBITOR DIMILIN TO CONTROL FLIES IN CATTLE-RAISING BARNs. MED. PARAZITOL (MOSK) MAR-APR. 1987. (2) PP. 80-83.

Record - 650

KOSTINA, M. N. AND V. P DREMOVA. 1986. EFFECTIVENESS OF THE JOINT USE OF REGULATORS OF INSECT DEVELOPMENT WITH INSECTICIDES AND BACTERIAL PREPARATIONS FOR CONTROLLING THE LARVAE OF BLOOD-SUCKING MOSQUITOS IN THE FIELD. MED. PARASITOL. (MOSK) 1986 JAN-FEB. (1) PP. 3-8.

Record - 651

CYTOCHROME P450 MONOOXYGENASES IN LARVAE OF INSECTICIDE SUSCEPTIBLE AND RESISTANT STRAINS OF THE AUSTRALIAN SHEEP BLOWFLY LUCILIA CUPRINA

KOTZE A C

PESTIC BIOCHEM PHYSIOL 46 (1). 1993. 65-72.

Full Journal Title: Pesticide Biochemistry and Physiology

Language: ENGLISH

ABSTRACT

The monooxygenase system of *Lucilia cuprina* larvae was examined using an insecticide-susceptible strain and strain and strains selected with butacarb, deltamethrin, or diflubenzuron. Aldrin epoxidase activity in the butacarb-selected strain peaked when the larvae had attained their maximum weight and then decreased rapidly as the larvae wandered from their food medium. Activity was localized mainly in the midgut, malpighian tubules, and body wall. Cytochrome P450 levels and aldrin epoxidase activities in microsomal preparations were approximately 3-fold and 14-fold higher, respectively, in the deltamethrin-selected strain, and 4.5- to 5-fold and 30-fold higher, respectively, in the butacarb- and diflubenzuron-selected strains compared to the susceptible strain. Cytochrome b5 levels were 1.8-fold higher in each of the resistant strains relative to the susceptible strain. NADPH-cytochrome c reductase levels were up to 1.2-fold higher in crude extracts prepared from the resistant strains relative to the susceptible strain. It is likely that increased monooxygenase levels are implicated in the resistances shown by the insecticide-selected strains.

Descriptors/Keywords: BUTCARB, DELTAMETHRIN, DIFLUBENZURON, ENZYME ACTIVITY, LOCALIZATION, MIDGUT, MALPIGHIAN TUBULES, BODY WALL

Record - 652

EFFECT OF DIFLUBENZURON ON THE BIOENERGETICS OF A HAIRY CATERPILLAR PERICALLIA RICINI

KRISHNAN M; CHOCKALINGAM S

J ENVIRON BIOL 10 (4). 1989. 383-392.

Full Journal Title: Journal of Environmental Biology

Language: ENGLISH

ABSTRACT

The effect of diflubenzuron (1-(4-chlorophenyl)-3-(2,6 diflubenzoyl) urea) has been studied on the bioenergetics of a hairy caterpillar, *Pericallia ricini*. The 48 h LD50 value of diflubenzuron for V instar larvae was 40 μ g/larva. Reduction in growth (59.74%) and over expenditure of energy for metabolism (13.20%) were noted in the larvae under toxic stress. Diflubenzuron administered along with food not only inhibited the deposition of chitin in the cuticle, but also affected the bioenergetics of the larvae.

Descriptors/Keywords: METABOLISM, GROWTH, INSECTICIDE

Record - 653

KRIZE, J. W. AND G. E. CANNON. 1976. REPORT TH-6040 EGG TO EGG REPRODUCTION IN FATHEAD MINNOWS; REPORT CANNON LABORATORIES, INC.

Record - 654

THE INFLUENCE OF DIFLUBENZURON ON SEVERAL REPRODUCTIVE CHARACTERISTICS IN MALE AND FEMALE LAYER BREED CHICKENS

KUBENA L F

POULT SCI 61 (2). 1982. 268-271.

Full Journal Title: Poultry Science

Language: ENGLISH

ABSTRACT

The possibility exists for the accidental contamination of feedstuffs used in poultry and livestock feeds with diflubenzuron (Dimilin, TH 6040; N-[[[(4-chlorophenyl) amino]-carbonyl]-2, 6-difluorobenzamide), an insect growth regulator. The effect of this insecticide on reproduction in chickens was tested by feeding diflubenzuron at levels of 0, 2.5, 25 and 250 ppm to male and female layer-breed chickens from 1 day of age through a laying cycle. Egg production, egg weight, eggshell weight, fertility, hatchability and effects on progeny were measured. Feeding diflubenzuron at levels up to 250 ppm had no effect. Results were useful in evaluating the use of diflubenzuron in the field.

Descriptors/Keywords: POULTRY, CHICK, LIVESTOCK, DIMILIN, TH-6040, FERTILITY, HATCHABILITY, FOOD TOXICITY, INSECTICIDE, NEGLIGIBLE TOXICITY

Record - 655

THE INFLUENCE OF DIFLUBENZURON ON SEVERAL WEIGHT CHARACTERISTICS IN GROWING MALE BROILER AND LAYER CHICKENS

KUBENA L F

POULT SCI 60 (6). 1981. 1175-1182.

Full Journal Title: Poultry Science

Language: ENGLISH

ABSTRACT

Diflubenzuron (Dimilin, TH-6040; N-[[[(4-chlorophenyl)-amino]carbonyl]-2,6 -difluorobenzamide) [insecticide] was fed to male broiler and layer chickens at 0, 2.5, 25 and 250 ppm from 1-98 days of age. Characteristics measured were body wt, grams of feed per gram of body wt, testes wt, liver wt, comb wt and feet wt. There were no consistent significant differences among controls 2.5, 25 or 250 ppm groups in any characteristic measured. There was a trend for higher body wt in chickens fed diets containing diflubenzuron.

Descriptors/Keywords: DIMILIN, TH-6040, TESTES, LIVER, COMB, FEET, WEIGHT, FEED EFFICIENCY, NEGLIGIBLE TOXICITY, INSECTICIDE

Record - 656

KUBENA, L. F. AND D. A. WITZEL. 1980. NUTRITIONAL AND METABOLIC ASPECTS OF TOXICITY IN LIVESTOCK AND POULTRY TOXICOLOGY; RESEARCH PROJECTS DIRECTORY 5. ISS. 10.

Record - 657

EVALUATION OF THE EFFECT OF SOME CHITIN SYNTHESIS INHIBITORS AGAINST THRIPS PALMI KARNY THYSANOPTERA THIRIPIDAE INFESTING MUSK MELONS

KUBOTA S

APPL ENTOMOL ZOOL 24 (4). 1989. 349-357.

Full Journal Title: Applied Entomology and Zoology

Language: ENGLISH

ABSTRACT

Activities of 5 chitin synthesis inhibitors against Thrips palmi infesting musk melons were evaluated in the laboratory and some compounds were applied on musk melons grown in a greenhouse from 1987 to 1988, in Shizuoka Prefecture, Japan. Five compounds of diflubenzuron (DFB, 235 ppm), teflubenzuron (TFB, 50 ppm), chlorflazuron (CFA, 50 ppm), flufenoxuron (FFX, 50 ppm) and chiromazine (CHM, 750 ppm) were utilized. The former 4 compounds belong to benzoylphenyl ureas. After foliar spraying with the 5 compounds, it was observed that the numbers of mature larvae which dropped from leaves in order to pupate decreased drastically. No larvae treated with these chemicals pupated, except for those treated with CHM. The same larvicidal activity was observed after dipping

treatments of mature larvae treated with DFB, TFB, CFA and FFX. DFB, CFA and FFX also showed ovicidal activity in adults. LC50 values of CFA and DFB for mature larvae were 13 ppm and 140 ppm respectively. In foliar application of CFA, FFX and DFB on musk melons grown in a greenhouse, CFA and FFX controlled the thrips much better than DFB and conventional spraying of methidathion and BPMC.

Descriptors/Keywords: DIFLUBENZURON, TEFLUBENZURON, CHLORFLUAZURONE, FLUFENOXURON, CHIROMAZINE, LARVICIDAL ACTIVITY, OVICIDAL ACTIVITY, SHIZUOKA PREFECTURE, JAPAN

Record - 658

INSECTICIDE RESISTANCE PROBLEMS IN HOUSEFLY MUSCA DOMESTICA CONTROL IN STABLES IN SOUTH GERMANY

KUENAST C

11TH MEETING OF THE DEUTSCHE GESELLSCHAFT FUER PARASITOLOGIE (GERMAN SOCIETY OF PARASITOLOGY), BAD HARZBURG, WEST GERMANY, APR. 10-14, 1984. ZENTRALBL BAKTERIOL MIKROBIOL HYG SER A 258 (2-3). 1984. 429.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: ABSTRACT, NEPOREX, DIMILIN, TRICHLORFON, DIMETHOATE

Record - 659

A REVIEW OF THE SELECTIVITY OF DIMILIN IN ORCHARDS

KUIJPERS L A M

INTERNATIONAL SYMPOSIUM ON INTEGRATED PLANT PROTECTION IN ORCHARDS (ISIPPO): PART II, GODOLLO, HUNGARY, JULY 31-AUGUST 5, 1990. ACTA PHYTOPATHOL ENTOMOL HUNG 27 (1-4 PART 2). 1992. 375-384.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: INSECT, MITE, HORTICULTURE, CHITIN, DEPOSITION, DISTURBANCE, INTEGRATED PEST MANAGEMENT, INSECTICIDE ACTIVITY, SPIDER, SIDE EFFECTS, MOLECULAR STRUCTURE

Record - 660

POSSIBILITIES OF CONTROLLING THE WILLOW LEAF BEETLE LOCHMAEA CAPREAE L

KULA E

LESNICKA FAKULTA VSZ, ZEMEDEL'SKA 3, 613 00 BRNO.

LESNICTVI (PRAGUE) 37 (7). 1991. 591-601.

Full Journal Title: LESNICTVI (Prague)

Language: CZECH

ABSTRACT

The laboratory culture of the pest was used for verifying the effectiveness of chitin synthesis inhibitors (Dimilin 25 DP, Dimilin 48 SC, Alsystin 25 WP, Nomolt 15 SC, Cascada 5 EC, the Beetlerul biopreparation, and the Trebon 30 EC preparation, having non-specific action on the mortality of the larvae and developmental stages of the willow leaf beetle (*Lochmaea capreae* L.). The sample trees of the European birch (tree used as the nutrient source plant) were treated with the above mentioned preparations at the beginning of the laboratory culture and the needed amount of food was currently collected in 2-3-day intervals to be given to the pest. All the tested inhibitors of chitin synthesis killed the larvae of the willow leaf beetle. The highest effectiveness was recorded in Sonet 5 EC, Nomolt

15 SC and (at an increased application rate) Dimilin 48 SC. Trebon 30 EC caused 100% mortality of the larvae of the pest. The Beertlerul biopreparation did not exhibit significant effectiveness in the control of the pest and cannot be recommended for larger-scale use for the control of the pest, even despite an increased pest mortality in the prepupal and pupal stages.

Descriptors/Keywords: LARVAL MORTALITY, FORESTRY PEST, CHITIN SYNTHESIS INHIBITOR, GROWTH REGULATOR, BIOLOGICAL CONTROL

Record - 661

OVICIDAL ACTIVITY OF DIFLUBENZURON ON THE EGGS OF UZI FLY TRICHOLYGA BOMBYCIS
DIPTERA TACHINIDAE

KUMAR P; REDDY V V; REMADEVI O K; JOLLY M S; DATTA R K

INDIAN J SERIC 24 (2). 1985 . 58-61.

Full Journal Title: Indian Journal of Sericulture

Language: ENGLISH

ABSTRACT

Spray of 10, 30, 40, 50, 70 and 100 ppm concentrations of Diflubenzuron on 1, 6, 12, 24 and 48 hrs old eggs of *Tricholyga bombycis* laid on *Bombyx mori* caused significant egg mortality. All the concentrations of Diflubenzuron had tremendous effect on hatchability of eggs of uzi fly upto 24 hours. (1.70-15.28% experimental Vs. 83.17-92.48% control). Also before oviposition the spraying of same concentrations of Diflubenzuron on the silkworms and subsequent infestation by uzi fly after an interval of 1, 6, 12, 24, 48, 72 and 96 hrs caused egg mortality. There is significant effect on egg hatchability of all the concentrations of Diflubenzuron over both the controls. However, 100 ppm concentration was most effective upto 48 hrs (2.24-13.75% experimental Vs. 84.06-92.02% control).

Descriptors/Keywords: BOMBYX-MORI, OVIPOSITION, CONCENTRATION, INFESTATION

Record - 662

KUMAR, R. AND N. S. RUPRAH. 1982. EFFICACY OF SEVIN MALATHION AND DIMILIN AGAINST POULTRY LICE. THE HARYANA VETERNARIAN. DE. 1982. 21 (2): 106-108.

Record - 663

KUNZ, S. E. AND D. E. BAY. 1977. DIFLUBENZURON: EFFECTS ON THE FECUNDITY, PRODUCTION AND LONGEVITY OF THE HORN FLY HAEMATOBIA IRRITANS. SOUTHWEST ENTOMOL. 2 (1): 27-31.

Record - 664

KUNZ, S. E., R. L. HARRIS, B. F. HOGAN, AND J. E. WRIGHT. 1977. INHIBITION OF DEVELOPMENT IN A FIELD POPULATION OF HORN FLIES HAEMATOBIA IRRITANS TREATED WITH DIFLUBENZURON (ON CATTLE). J. ECON. ENTOMOL. 70 (3): 298-300.

Record - 665

KUNZ, S. E., C. D. SCHMIDT, AND R. L. HARRIS. 1976. EFFECTIVENESS OF DIFLUBENZURON APPLIED AS DUST TO INHIBIT REPRODUCTION IN HORN FLIES HAEMATOBIA IRRITANS. SOUTHWEST ENTOMOL. 1 (4): 190-193.

Record - 666

KURCZEWSKI, F. AND C. WANG, AND D. GRIMBL. 1975. ENVIRONMENTAL IMPACT OF DIMILIN. COOPERATIVE AGREEMENT NO. 42-177. FINAL REPORT (STATE UNIV OF NEW YORK-SYRACUSE.

APPLIED FORESTRY RESEARCH INSTITUTE AND DEPT. OF ENTOMOL. AND DEPT. OF BOTANY AND PATHOLOGY FOR US FOREST SERVICE, GYPSY MOTH RESEARCH, DEVELOPMENT AND APPLICATION PROGRAM, UNPUBLISHED STUDY.

Record - 667

LACEY, L. A. 1979. EVALUATION OF BACILLUS THURINGIENSIS BERLINER AND DIFLUBENZURON AS BIOCIDES FOR BLACKFLIES: DEVELOPMENT OF LABORATORY AND FIELD BIOASSAY TECHNIQUES; BY LAWRENCE ANTHONY LACEY. XIII, 141 LEAVES. ANN ARBOR, MI., UNIV MICROFILMS INT'L.

Record - 668

FIELD EVALUATION OF DIFLUBENZURON AGAINST SIMULIUM LARVAE

LACEY L A; MULLA M S

MOSQ NEWS 39 (1). 1979. 86-90.

Full Journal Title: Mosquito News

Language: ENGLISH

ABSTRACT

Diflubenzuron (WP, wettable powder, 25%) was tested in small artificial streamlets against *S. vittatum* Zetterstedt and a mixed population of *Simulium* spp. at 0.2, 0.1 and 0.02 ppm AI [active ingredient] for 1 h of exposure. Granular formulation (0.5%) was tested against a mixed population at 0.04 ppm based on 1 h exposure. The 0.2 and 0.1 ppm gave about 95% + control of exposed larvae of *S. vittatum* 30 m below treatment point. The mixed population responded with 100 and 76% mortality (200 m below treatment) of exposed larvae to the 0.2 and 0.02 ppm concentration, respectively. The granular formulation produced very little mortality in the mixed population. At 0.2 ppm/1 h diflubenzuron when tested against a mixed population [*S. bivittatum* Malloch (86%) and *S. argus* Williston (14%)] in a moderate-size stream, produced complete mortality of the exposed larvae for the entire length of the stream (4.3 km). Within 3.5 wk the population rebounded to 56% of the pretreatment numbers. Seven weeks after treatment the population was 64% of the pretreatment numbers.

Descriptors/Keywords: SIMULIUM-VITTATUM, SIMULIUM-BIVITTATUM, SIMULIUM-ARGUS, INSECTICIDE, STREAM MORTALITY

Record - 669

FACTORS AFFECTING THE ACTIVITY OF DIFLUBENZURON AGAINST SIMULIUM LARVAE DIPTERA SIMULIIDAE

LACEY L A; MULLA M S

MOSQ NEWS 38 (2). 1978 264-268.

Full Journal Title: Mosquito News

Language: ENGLISH

ABSTRACT

Diflubenzuron [insect growth regulator] at 0.02 ppm AI[active ingredient]/h tested in the laboratory against late instars of field-collected larvae of *Simulium vittatum*, *S. argus*, *S. tescorum*, *S. aureum* and *S. virgatum* produced differential mortality in these species. *S. vittatum* was the least, while *S. tescorum* was the most susceptible species, responding with 59 and 88% mortality, respectively. Second and 3rd instars of *S. vittatum* were much more susceptible than the ultimate instars, suffering 3 times more mortality. There was a positive correlation ($r = 0.99$) between temperature and extent of mortality; larvae exposed to 0.02 ppm/1 h at 10, 15, 19 and 24.degree. C responded with 18, 35, 53 and 75% preimaginal mortality, respectively. Diflubenzuron was shown to be active per os. No contact activity was observed when larvae were exposed in static water. Rearing water pH and degree of turbidity and larval crowding were not shown to significantly influence the biocidal activity of diflubenzuron.

Descriptors/Keywords: SIMULIUM-VITTATUM, SIMULIUM-ARGUS, SIMULIUM-TESCORUM, SIMULIUM-AUREUM, SIMULIUM-VIRGATUM, INSECT GROWTH REGULATOR, BIOCIDAL ACTIVITY, DEVELOPMENT STAGE, TEMPERATURE, PH

Record - 670

BIOLOGICAL ACTIVITY OF DIFLUBENZURON AND 3 NEW INSECT GROWTH REGULATORS AGAINST SIMULIUM VITTATUM DIPTERA SIMULIIDAE

LACEY L A; MULLA M S

MOSQ NEWS 38 (3). 1978 377-381.

Full Journal Title: Mosquito News

Language: ENGLISH

ABSTRACT

Three urea analogs, diflubenzuron [1-(4-chlorophenyl)-3-(2,6-difluorobenzoyl) urea], Bay SIR 6874 [1-(3,5-dichloro-4-(4-nitrophenoxy)phenyl)-3-(2-chlorobenzoyl)-urea], Bay SIR 8514 [1-(4-trifluoromethoxyphenyl)-3-(2-chlorobenzoyl)urea] and a JH [juvenile hormone] analog Stauffer MV-678 [2-methyl-9-(p-isopropylphenyl)-2,6-dimethylnonane] were compared for activity at 0.02 ppm AI[active ingredient]/1 h against late instars of *S. vittatum*. Mean percent mortalities of 70, 100, 86 and 45% were observed, respectively. Some abnormalities produced in larvae by the urea analogs are discussed. Bay SIR 6874 produced mean mortalities in 72-96 h old *S. vittatum* eggs of 15 and 50% at 0.1 and 0.2 ppm/24 h, respectively. Diflubenzuron produced 100% mortality in eggs of the same age at 0.2 ppm/24 h.

Descriptors/Keywords: DIFLUBENZURON, BAY-SIR-6874, BAY-SIR-8514, 2 METHYL-9-P-ISOPROPYLPHENYL-2 6-DIMETHYL NONANE, STAUFFER MV-678, JUVENILE GROWTH HORMONE ANALOG, LATE INSTARS, MORTALITY

Record - 671

LACEY, L. A. AND M. S. MULLA., 1977. LARVICIDAL AND OVICIDAL ACTIVITY OF DIMILIN [1-4 CHLOROPHENYL)-3-(2,6-DIFLUROBENZOYL) UREA] AGAINST SIMULIUM VITTATUM. J. ECON. ENTOMOL 70 (3): 369-373.

Record - 672

LAKE, R. W. AND F. E. MURPHY. 1975. MOSQUITO LARVAE (AEDES SOLLICITANS) CONTROL WITH DIMILIN; REPORT THOMPSON-HAYWARD CHEMICAL CO.

Record - 673

LARSON, D. J. 1987. INTERIM REPORT ON BIOLOGICAL ASPECTS OF STUDY ON FATE AND IMPACTS OF DIMILIN IN NEWFOUNDLAND BOG POOLS. CANADIAN FORESTRY SERVICE, ST. JOHN'S, NEWFOUNDLAND.

Record - 674

FIELD LIFE OF THE INSECT GROWTH REGULATOR DIFLUBENZURON ON LUCERNE MEDICAGO SATIVA

LAUREN D R; AGNEW M P; HENZELL R F

N Z J AGRIC RES 27 (3). 1984. 425-430.

Full Journal Title: New Zealand Journal of Agricultural Research

Language: ENGLISH

ABSTRACT

The residual life of the insect growth regulator, diflubenzuron, applied as a wettable powder spray to

growing lucerne in Feb. was measured. For single spray applications of 20-100 g/ha applied in the 1st wk of the trial, initial residue levels were 1.8-8.5 mg/kg. The 1st and 2nd half-lives were 3 and 4 days, respectively, whereas the 3rd half-life was > 15 days. Residues of 0.3-1.5 mg/kg remained 22 days after application. Dilution of the chemical appeared to be caused more rapidly by herbage growth than by chemical degradation. In multiple spray trials with applications of 20-100 g/ha at weekly intervals, the disappearance rate fell off significantly towards the end of the trial period when the herbage growth was less. The multiple sprays gave increasing residue levels throughout the trial period, with residues of 3.2-23.5 mg/kg at 8 days following the 4th spray. A simplified procedure for the analysis of diflubenzuron residues on plant material is also described.

Descriptors/Keywords: RESIDUE, PERSISTENCE, HERBAGE GROWTH, CHEMICAL DEGRADATION

Record - 675

THE EFFECT OF JUVENIDS AND INHIBITORS OF CHITIN SYNTHESIS ON THE HOUSE FLY AND THE PERSPECTIVES FOR THEIR PRACTICAL IMPLEMENTATION

LAVCIEVA-NACEVA G V; LAVCIEV V

HRDY, I. (ED.). INSECT CHEMICAL ECOLOGY; CONFERENCE, TABOR, CZECHOSLOVAKIA, AUGUST 12-18, 1990. XIII+513P. SPB ACADEMIC PUBLISHING BV: THE HAGUE, NETHERLANDS; ACADEMIA PUBLISHING HOUSE OF THE CZECHOSLOVAK ACADEMY OF SCIENCES: PRAGUE, CZECHOSLOVAKIA. ILLUS. ISBN 90-5103-053-3. 0 (0). 1991. 475-480.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: ALTOSID, METHOPRENE, DIMILIN, CASCADE, INSECT GROWTH REGULATOR, BIOLOGICAL CONTROL

Record - 676

LAW, K. 1975. FIELD EVALUATIONS OF THE EFFECTS OF DIMILIN ON HONEY BEES AND THE EFFICACY OF POPULATION CONTROL OF GYPSY MOTH. NEW JERSEY, DEPT. OF AGRICULTURE. DIV. OF PLANT INDUSTRY; UNPUBLISHED STUDY.

Record - 677

AGE SPECIFIC FECUNDITY AND OFFSPRING SURVIVORSHIP IN THE CARIBBEAN FRUIT FLY ANASTREPHA SUSPensa AFTER DIFLUBENZURON TREATMENT

LAWRENCE P O

INSECT SCI APPL 4 (3). 1983. 285-290.

Full Journal Title: Insect Science and its Application

Language: ENGLISH

ABSTRACT

Late 3rd stage (7-day-old) larvae and 1-day-old pupae of *A. suspensa* Loew (Diptera: Tephritidae) were dipped for 5 min in suspensions of 25% WP Dimilin (diflubenzuron) at 6 dosages ranging from 0.003-0.1% a.i. [active ingredient]. Diflubenzuron caused significant ($P < 0.05$) mortality during the pupal stages of both groups treated. The resulting adult populations were drastically reduced. The incidence of crumpled wings, deformed abdomens and ovipositors in these adults was 2-7 times and 4-9 times higher than the respective controls of treated larvae and pupae. The morphological abnormalities altered mating competitiveness of males and successful copulation and oviposition by females. Fecundity of females was reduced and diflubenzuron effects persisted into the 1st generation and caused decreased egg viability. Adults fed a 0.1% a.i. diflubenzuron-treated diet for 27 days had no significant mortality, but had decreased fecundity. Their pattern of oviposition did not differ from the control. Fecundity

levels similar to the control's were achieved 6 days after the treated diet was replaced by normal diet. Diflubenzuron treatment of adults also drastically decreased the survivorship of 1st-generation individuals between egg-hatch and pupation. Almost all individuals that pupated emerged as adults. No abnormalities were observed in 1st-generation adults or in the survivorship of their offspring.

Descriptors/Keywords: OVIPOSITION, MATING, COMPETITIVENESS, ANATOMICAL ABNORMALITY

Record - 678

DEVELOPMENTAL AND REPRODUCTIVE BIOLOGIES OF THE PARASITIC WASP
BIOSTERES LONGICAUDATUS REARED ON HOSTS TREATED WITH A CHITIN SYNTHESIS
INHIBITOR

LAWRENCE P O

INSECT SCI APPL 1 (4). 1981. 403-406.

Full Journal Title: Insect Science and its Application

Language: ENGLISH

ABSTRACT

Larvae of the Caribbean fruit fly, *Anastrepha suspensa* Loew (Diptera: Tephritidae) parasitized by the wasp, *Biosteres longicaudatus* Ashmead (Hymenoptera: Braconidae), were topically treated with diflubenzuron (Dimilin), a chitin synthesis inhibitor, at 100, 500 and 1000 ppm. Each dosage was initiated during the parasite's egg stage, each of 4 larval stages and the pupal stage (pharate pupa + pharate adult). Adults emerging from all immature stages treated with the 2 higher dosages were significantly ($P < 0.05$) fewer than the controls. Developmental stages, in decreasing order of susceptibility to diflubenzuron were as follows: egg, 1st instar, pharate adult, pharate pupa and larval stages 2-4. Abnormally developed ovipositors occurred in some adults which emerged from eggs, pharate pupa and pharate adults that were treated with the 2 higher concentrations. Such females were unable to successfully locate and parasitize hosts. Females with normal ovipositors which emerged from treated eggs and pharate adults were able to find and attack hosts but had significantly fewer eggs in their ovaries and oviposited less than the controls. The F1 eggs laid by these females developed normally and survived to adulthood with no apparent abnormalities.

Descriptors/Keywords: ANASTREPHA-SUSPENSAS, DIFLUBENZURON, CHITIN SYNTHESIS, PHARATE ADULT, OVIPOSITOR

Record - 679

LEBLANC, G. 1975. THE CHRONIC TOXICITY OF ALTOSID, TH-6040, AND R-20458 TO DAPHNIA MAGNA. UNPUBLISHED STUDY RECEIVED FEB. 8, 1977 UNDER 20954-1; PREPARED BY EG&G. BIONOMICS, SUBMITTED BY ZOECON CORP. PALO ALTO, CA.

Record - 680

ACUTE TOXICITY OF TEMEPHOS FENOXYCARB DIFLUBENZURON AND METHOPRENE AND
BACILLUS THURINGIENSIS-VAR-ISRAELENIS TO THE MUMMICHOG FUNDULUS HETEROCLITUS
LEE B M; SCOTT G I

BULL ENVIRON CONTAM TOXICOL 43 (6). 1989. 827-832.

Full Journal Title: Bulletin of Environmental Contamination and Toxicology

Language: ENGLISH

Descriptors/Keywords: MOSQUITO FISH, INSECTICIDE, PEST CONTROL, WATER POLLUTION

Record - 681

CYTOCHEMICAL DEMONSTRATION OF THE EFFECTS OF THE ACYLUREAS FLUFENOXURON AND DIFLUBENZURON ON THE INCORPORATION OF CHITIN INTO INSECT CUTICLE

LEE S A; CLARKE B S; JENNER D W; WILLIAMSON F A

PESTIC SCI 28 (4). 1990. 367-376.

Full Journal Title: Pesticide Science

Language: ENGLISH

ABSTRACT

Flufenoxuron ('Cascade'.dag.) is a novel acylurea with acaricidal and insecticidal properties. It acts in a similar manner to diflubenzuron (DFB) by impairing chitin incorporation into insect cuticle. Chitin can be localised cytochemically using the lectin, wheat germ agglutinin (WGA), which binds specifically to N-acetylglucosamine-containing polymers. WGA adsorbed to monodisperse colloidal gold (WGA-gold) was used as an electron-dense marker for localising chitin in the cuticle of sixth-instar *Spodoptera littoralis*. In the cuticle of control insects, the deposition zone and endocuticle were heavily labelled. In flufenoxuron- and DFB-treated insects, only the endocuticle (formed before treatment) was labelled, the deposition zone being devoid of label. These results show that flufenoxuron and DFB act in similar manner in reducing chitin incorporation in the cuticle of *S. littoralis*.

Descriptors/Keywords: SPODOPTERA-LITTORALIS, INSECTICIDES, PEST

Record - 682

ECDYSIAL FAILURES IN THE COTTON BOLL WEEVIL ANTHONOMUS GRANDIS SYNERGISM OF DIFLUBENZURON WITH JUVENILE HORMONE

LEOPOLD R A; MARKS E P; EATON J K; KNOPER J

PESTIC BIOCHEM PHYSIOL 24 (2). 1985. 267-283.

Full Journal Title: Pesticide Biochemistry and Physiology

Language: ENGLISH

ABSTRACT

The frequency and etiology of ecdysial failures occurring during the pupal-adult transformation of the cotton boll weevil, *Anthonomus grandis*, was studied after treatment with juvenile hormone (JH) and/or diflubenzuron (DFB). Failure at emergence was the result of inability of the adult insects to escape from their pupal exuviae. Teratogenic effects in the form of pupal-adult intermediates or adults with pupal characters were not obtained with JH or DFB treatment after the larval-pupal ecdysis. Combining JH with the DFB treatment yielded a synergistic response that increased the frequency of ecdysial failures about sevenfold when applied in the later pupal stages. The fine structure of the abdominal cuticle of adults experiencing ecdysial failure after treatment with JH as white-eyed pupae exhibited granular deposits within the lamellar region and interference with deposition of the nonlamellate endocuticle. DFB treatment of the earlier pupal stages interfered with deposition of the lamellate cuticle by eliminating or reducing the lamellar structure. It was concluded that the primary interaction of JH with DFB was that of extending or reinitiating DFB sensitivity in the later pharate adult. A secondary interaction may involve inhibition of cuticle hardening as both JH and DFB appear to inhibit the tanning process of adults treated as white-eyed pupae.

Descriptors/Keywords: INSECT GROWTH REGULATOR, TERATOGENESIS, PUPAL-ADULT TRANSFORMATION

Record - 683

SYNERGISM OF DIFLUBENZURON WITH JUVENILE HORMONE IN THE COTTON BOLL WEEVIL

LEOPOLD R A; MARKS E P

ANNUAL MEETING OF THE AMERICAN SOCIETY OF ZOOLOGISTS, AMERICAN MICROSCOPICAL SOCIETY, AMERICAN SOCIETY OF LIMNOLOGY AND OCEANOGRAPHY, ANIMAL BEHAVIOR SOCIETY, CANADIAN SOCIETY OF ZOOLOGISTS, ECOLOGICAL

SOCIETY OF AMERICA, SOCIETY OF SYSTEMATIC ZOOLOGY, AND THE WESTERN SOCIETY OF NATURALISTS, SEATTLE, WASH., USA, DEC. 27-30, 1980. AM ZOO 20 (4). 1980. 878.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: ABSTRACT, PUPAL, ADULT, INTERMEDIATE, ALTUSID, TOPICAL APPLICATION, ENZYME, CHITIN SYNTHESIS

Record - 684

REDUCTION IN OFFSPRING SURVIVAL OF LUCILIA CUPRINA FOLLOWING CONSUMPTION OF INSECT DEVELOPMENT INHIBITORS

LEVOT G W; SHIPP E

J AUST ENTOMOL SOC 23 (2). 1984. 85-89.

Full Journal Title: Journal of the Australian Entomological Society

Language: ENGLISH

ABSTRACT

The insect development inhibitors BAY SIR 8514 (BS), diflubenzuron (DFB) and Cyromazine (CGA-72662) (CGA) were examined for their ability to reduce egg laying and survival from egg to pupa, when eaten by susceptible and diazinon-resistant adult female *L. cuprina* (Wiedemann). BS and DFB reduced the number of eggs developing to pupae in each strain, the diazinon-resistant R-strain being affected by about half the dose needed for the susceptible flies, but the Q-strain demonstrated some cross-resistance. BS was 6-8 times more effective than DFB. CGA did not influence the development of offspring in a dose-dependent manner.

Descriptors/Keywords: BAY-SIR-8514, DIFLUBENZURON, CYROMAZINE, DIAZINON

Record - 685

LEVOT, G. W. AND E. SHIPP. 1983. INTERFERENCE TO EGG AND LARVAL DEVELOPMENT OF THE AUSTRALIAN SHEEP BLOWFLY BY THREE INSECT GROWTH REGULATORS - BAY SIR 8514 - CGA-72662 - DIFLUBENZURON. ENTOMOLOGIA EXPERIMENTALIS ET APPLICATA 34 (1): 58-64.

Record - 686

TOLERANCE OF THE PLANARIAN DUGESIA DOROTOCEPHALA TO HIGH CONCENTRATIONS OF PESTICIDES AND GROWTH REGULATORS

LEVY R; MILLER T W JR

ENTOMOPHAGA 23 (1). 1978 31-34.

Full Journal Title: Entomophaga

Language: ENGLISH

ABSTRACT

In laboratory tests, the planarian *D. dorotocephala* [predator of mosquito larvae] (Woodworth) was exposed to temephos (0.001 ppm), fenthion (0.003, 0.0035 and 0.004 ppm), malathion (0.1 ppm), chlorpyrifos (0.001 and 0.004 ppm), methoprene (0.005 ppm) and Dimilin (0.005 ppm) for 24 h without producing recognizable immediate or delayed effects to the viability, behavior and asexual reproductive capacity of this planarian. *D. dorotocephala* tolerated relatively high concentrations of the pesticides and growth regulators suggesting their potential for integrated mosquito control. Post-exposure observations concerning the asexual reproductive capacity of *D. dorotocephala* initially reared in water with a chloride content of 1200-1500 ppm (type 1 planaria) and 780-870 ppm (type 2 planaria) before experimentation, indicated that the degree of asexual reproduction of type I planaria was significantly greater than was observed with type 2 planaria. Artificial stimulation of asexual reproduction and thereby, mass production of *D. dorotocephala* seems possible by subjecting

them to pesticide and growth regulator stress and/or by subjecting them to changes in Cl- or salinity levels.

Descriptors/Keywords: MOSQUITO LARVA, TEMEPHOS, FENTHION, MALATHION, METHOPRENE, DIMILIN, CHLORPYRIFOS, INSECTICIDES, CHLORIDE LEVEL, ASEXUAL REPRODUCTION, BEHAVIOR, ENVIRONMENTAL STRESS

Record - 687

LEWALLEN, L. L. 1973. FIELD TESTS WITH DIMILIN FOR CONTROL OF MOSQUITOES; REPORT THOMPSON HAYWARD CHEMICAL COMPANY NO. C3125.

Record - 688

APPLICATION OF DIMILIN TO CONTROL POPLAR LONGHORN BEETLES AND OTHER INSECTS

LI W; WU C; CAI C; WANG C; ZHOU J; SUN Y; ZHENG Y

FOR RES 5 (6). 1992. 722-726.

Language: CHINESE

ABSTRACT

Dimilin is a kind of anti-moulting pheromone, which does not harm to human beings, animals and the environment. Spray of 1,000 times Dimilin to control the adults of longhorn beetles in the emergence period on a large scale can reduce the amount of eggs by 21%, reduce the hatching rate by 26% and reduce the number of young larvae by 55%. Besides, the spray can also reduce the number of *Clostera anachoreta* and *C. anastomosis* etc. in the forest. One spray is valid for 20 .apprx. 30 days, which is economic and easy to carry out. Dosage for 1 h is 300 .apprx. 450 g and the expense for 1 ha is 9 .apprx. 10.5 yuan.

Descriptors/Keywords: CLOSTERA-ANACHORETA, CLOSTERA-ANASTOMOSIS, ANTI-MOLTING PHEROMONE, PEST CONTROL

Record - 689

THE TOXICITY OF DIFLUBENZURON TO OXYA JAPONICA AND ITS EFFECT ON MOLTING

LIM S-J; LEE S-S

PESTIC SCI 13 (5). 1982. 537-544.

Full Journal Title: Pesticide Science

Language: ENGLISH

ABSTRACT

A laboratory evaluation of the acute toxicity of diflubenzuron against the final stage of *Q. japonica* nymphs showed that it was more effective in preventing the development of the nymphs into the adults when applied topically, than when injected. Histological studies revealed that treated nymphs that subsequently died, before or during ecdysis, suffered from severe endocuticular lesions. Comparable abnormalities and disruption of endocuticular deposition and growth were also seen in nymphs that were treated topically with diflubenzuron at 50 or 200 .mu.g a.i.[active ingredient]/insect, although these nymphs appeared normal externally.

Descriptors/Keywords: HISTOLOGY, TOPICAL APPLICATION

Record - 690

TOXICITY OF DIFLUBENZURON TO THE GRASSHOPPER OXYA JAPONICA EFFECTS ON REPRODUCTION

LIM S-J; LEE S S

ENTOMOL EXP APPL 31 (2). 1982. 154-158.

Full Journal Title: Entomologia Experimentalis et Applicata

Language: ENGLISH

ABSTRACT

When fed to adult female *O. japonica* Willemse [a potential rice pest], diflubenzuron retards ovarian development of this grasshopper, causing an increase in the percentage of terminal oocyte resorption. The fecundity of the females and egg hatchability were significantly reduced. Treated females showed a characteristic tendency for the hind legs to break off from the body. Ingestion of the compound decreased the life span of adult females.

Descriptors/Keywords: RICE PEST, OOCYTE RESORPTION, FECUNDITY, HATCHABILITY

Record - 691

LINCER, J. 1978. A CRITICAL, SELECTIVE REVIEW OF THE AVIAN TOXICITY OF THE PROPOSED PESTICIDE DIMILIN (DIFLUBENZURON); UNPUBLISHED STUDY RECEIVED MAR. 15, 1978 UNDER 148-1259; PREPARED BY ECO-ANALYSTS, INC., SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS. .

Record - 692

RAPID METHOD FOR MASS MARKING BOLL WEEVILS ANTHONOMUS GRANDIS GRANDIS
LINDIG O H; WIYGUL G; WRIGHT J E; DAWSON J R; ROBERSON J

J ECON ENTOMOL 73 (3). 1980. 385-386.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

The addition of 550 ppm Calco Oil Red N-1700 dye to larval diet marked the approximately 1 million adult *A. g. grandis* Boheman that were reared on the diet each week. No significant differences occurred in yield of adults, weight, number of eggs per female per day, or percent hatch. There were no significant differences in longevity, sterility, pheromone production, or mating capability of marked and unmarked adults when fed 100 ppm diflubenzuron for 6 days and then exposed to 10 krads of .gamma.-irradiation from a ¹³⁷Cs source.

Descriptors/Keywords: CALCO OIL RED, EGG, LONGEVITY, STERILITY, PHEROMONE PRODUCTION, DIFLUBENZURON, GAMMA IRRADIATION

Record - 693

LINEVA, V. A., AND L. M. CHUNINA. 1980. EFFECT OF INSECT DEVELOPMENT INHIBITORS, DIMILIN, ALTOZIDE AND ALTOZARE, ON HOUSE FLIES MUSCA DOMESTICA. I. EFFECT OF DEVELOPMENT INHIBITORS ON THE IMAGO OF HOUSE FLIES. MEDITSINSKAIA PARAZITOLOGIIA I PARAZITARNYE BOLEZNI. 49(2) MAR./APR. 1980. PP. 60-64.

Record - 694

LINEVA, V. A. AND L. M. CHUNINA. 1980. ACTION OF INSECT DEVELOPMENT INHIBITORS, DIMILIN, ALTOZIDE, AND ALTOZARE, ON HOUSEFLY MUSCA DOMESTICA. II. ACTION OF DEVELOPMENT INHIBITORS ON THE LARVAE OF HOUSEFLY. MEDITSINSKAIA PARAZITOLOGIIA I PARAZITARNYE BOLEZNI 49(1) JAN./FEB. 1980. PP. 55-58.

Record - 695

LIPA, J. J. AND S. PRUSZYNSKI. 1979. TOXICITY OF TWO INSECT GROWTH REGULATORS DIMILIN WP 25 AND ENSTAR 5E FOR PHYTOSEIULUS PERSIMILIS A. (BIOLOGICAL CONTROL OF SPIDER

MITES (TERANYCHUS SPP.) IN GREENHOUSE CONDITION). BULL. ACAD. POL. SCI. SER. SCI. BIOL. 27 (12): 1037-1040.

Record - 696

LIPA, J. J. 1976. LABORATORY EXPERIMENTS WITH (THE CHITIN SYNTHESIS INHIBITOR) DIMILIN WP 25 AGAINST LARVAE OF AGROTIS SEGETUM SCHIFF AND MAMESTRA BRASSICAE L., LEPIDOPTERA, NOCTUIDAE (PESTS OF FIELD CROPS AND VEGETABLES). BULL. ACAD. POL. SCI. SER. SCI. BIOL. 24 (9): 509-515.

Record - 697

LIPA, J. J. AND W. CHMIELEWSKI. 1976. EFFECTS OF INSECT GROWTH REGULATOR DIMILIN WP 25 ON DEVELOPMENT OF TYROPHAGUS PUTRESCENTIAE (SCHRANK) (ACARINA: ACARIDAE) (CONTROL, CHITIN SYNTHESIS INHIBITION). BULL. ACAD. POL. SCI., SER. SCI. BIOL. 24 (7): 381-384.

Record - 698

LIVINGSTON, R. AND C. KOENIG. 1977. LIFE CYCLE TOXICITY TESTS CONCERNING THE ACUTE AND CHRONIC EFFECTS OF A PESTICIDE (TH-6040) ON THE MUMMICHUG (FUNDULUS HERTEROCLITUS WALBAUM), AND EGG-LAYING TOPMINNOW. UNPUBLISHED STUDY RECEIVED FEB. 6, 1978 UNDER 148-1259; PREPARED BY ENVIRONMENTAL PLANNING & ANALYSIS, SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 699

SHEEP OVIS-ARIES L. SHEEP KED MELOPHAGUS OVINUS L. SHEEP KED CONTROL WITH DIMILIN AS A 0.2 PERCENT SPRAY 1989

LLOYD J E; KUMAR R

THOMAS, J. H. (ED.). INSECTICIDE AND ACARICIDE TESTS, VOL. 16. 327P.
ENTOMOLOGICAL SOCIETY OF AMERICA: LANHAM, MARYLAND, USA. ILLUS. PAPER. 0 (0). 1991. 287-288.

Language: ENGLISH

Descriptors/Keywords: DIMILIN

Record - 700

CATTLE BOS-TAURUS MIXED BEEF BREEDS CATTLE BITING LOUSE BOVICOLA BOVIS L. LITTLE BLUE LOUSE SOLENOPOTES CAPILLATUS ENDERL. LONG-NOSED CATTLE LOUSE LINOGNATHUS VITULI L. EVALUATION OF DIMILIN 25 PERCENT WETTABLE POWDER AS A WHOLE-BODY SPRAY FOR CONTROL OF CATTLE LICE IN WYOMING USA 1989

LLOYD J E; KUMAR R; WAGGONER J W

THOMAS, J. H. (ED.). INSECTICIDE AND ACARICIDE TESTS, VOL. 16. 327P.
ENTOMOLOGICAL SOCIETY OF AMERICA: LANHAM, MARYLAND, USA. ILLUS. PAPER. 0 (0). 1991. 282.

Language: ENGLISH

Record - 701

EFFECT OF DIFLUBENZURON ON 4 SPECIES OF WEEVILS ATTACKING CITRUS IN FLORIDA USA

LOVESTRAND S A; BEAVERS J B

FLA ENTOMOL 63 (1). 1980. 112-115.

Full Journal Title: Florida Entomologist

Language: ENGLISH

ABSTRACT

Diflubenzuron (N-[[[4-chlorophenyl]amino]carbonyl]-2,6-difluorobenzamide), an insect growth regulator, was highly effective in reducing the reproductive potential of 4 spp. of weevils, *Pachnaeus litus* (Germar), *P. palus* (Olivier), *Artipus floridanus* Horn and *Diaprepes abbreviatus* (L.), that attack citrus in Florida. Egg hatch was significantly reduced when adult weevils were exposed to citrus foliage treated at rates of 0.15 and 0.30 g AI[active ingredient]/l of water.

Descriptors/Keywords: PACHNAEUS-LITUS, PACHNAEUS-OPALUS, ARTIPUS-FLORIDANUS, DIAPREPES-ABBREVIATUS, INSECT GROWTH REGULATOR

Record - 702

EFFECTS OF TRICHLORFON FENTHION AND DIFLUBENZURON ON THE ZOOPLANKTON COMMUNITY AND ON PRODUCTION OF RECIPROCAL-CROSS HYBRID STRIPED BASS FRY IN CULTURE PONDS

LUDWIG G M

AQUACULTURE 110 (3-4). 1993. 301-319.

Full Journal Title: Aquaculture

Language: ENGLISH

ABSTRACT

The application of trichlorfon, diflubenzuron, or fenthion to fertilized culture ponds stocked with 5-day-old, reciprocal-cross, hybrid striped bass fry resulted in an initial reduction in the concentration of rotifers and longer-term alteration of zooplankton successional stages, including changes in concentrations of rotifers, cladocerans, and copepods. Culture ponds without applied chemicals had the highest concentrations of small rotifers when fry were stocked, followed by high concentrations of cladocerans, copepod nauplii, and adult copepods. Fry survival in untreated ponds was higher than in chemically-treated ponds. Initial high concentrations of copepods in some ponds corresponded with low fry survival. Untreated ponds that were filled at the time of broodfish spawning, and stocked with fry 5 days later, had the highest fry survival rates, corresponding with peak rotifer concentrations, followed by a typical zooplankton succession.

Descriptors/Keywords: MORONE-SAXATILIS, ROTIFER, CLADOCERANS, COPEPOD, INVERTEBRATE, FISH, AQUACULTURE, WATER POLLUTION EFFECTS, AGRICHEMICAL, FRY SURVIVAL, SUCCESSION

Record - 703

LUEDTKE, P. 1978. INSECTICIDE SHOWS PROMISE AS DDT REPLACEMENT [DIFLUBENZURON (DIMILIN)]. CROPS - SOILS 30(4): 5-6. ID NO. 78-9026790.

Record - 704

LUNG, G. 1980. INVESTIGATIONS ON THE EFFECT OF DIFLUBENZURON (DIMILIN) ON THE LARVAE OF ATHALIA ROSAE L. J. OF PLANT DISEASES AND PROTECTION. 87(1): 13-26.

Record - 705

MACEK, K. 1977. AN ASSESSMENT OF THE POTENTIAL HAZARD TO AQUATIC ENVIRONMENTS ASSOCIATED WITH THE USE OF DIMILIN AS AN INSECTICIDE. UNPUBLISHED STUDY RECEIVED FEB. 6, 1978 UNDER 148-1259; SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 706

MUTAGENICITY TESTS OF DIFLUBENZURON IN THE MICRO NUCLEUS TEST IN MICE THE L-5178Y MOUSE LYMPHOMA FORWARD MUTATION ASSAY THE AMES SALMONELLA REVERSE MUTATION TEST

MACGREGOR J T; GOULD D H; MITCHELL A D; STERLING G P

MUTAT RES 66 (1). 1979. 45-54.

Full Journal Title: Mutation Research

Language: ENGLISH

ABSTRACT

Diflubenzuron, 1 of a new class of pesticides believed to act via inhibition of chitin synthesis in the developing insect cuticle, was tested for possible mutagenic activity using the micronucleus test in mice, the L5178Y mouse lymphoma forward mutation test at the thymidine kinase locus, and the Ames Salmonella/microsome reverse mutation test. No mutagenic effect was found.

Descriptors/Keywords: INSECT CUTICLE, INSECTICIDE, THYMIDINE, KINASE LOCUS

Record - 707

EFFECTS OF DIFLUBENZURON ON SHELL FORMATION OF THE FRESHWATER CLAM ANODONTA CYGNEA

MACHADO J; COIMBRA J; CASTILHO F; SA C

ARCH ENVIRON CONTAM TOXICOL 19 (1). 1990. 35-39.

Full Journal Title: Archives of Environmental Contamination and Toxicology

Language: ENGLISH

ABSTRACT

Freshwater clams, *Anodonta cygnea*, were treated during three months with the chitin-inhibitor, diflubenzuron (Dimilin PH 60-40), suspended in water at a concentration of 200 mg/L. Cytochemical observations, carried out on the outer mantle epithelium (OME) of the treated and control animals, showed secretory cells with a periodic-acid Schiff (PAS) positive reaction and a negative reaction to enzymatic hydrolysis by amylase. However, morphological observations by scanning electron microscopy (SEM) showed that diflubenzuron strongly affects the normal calcification process on the lamellar layer of the shell, since the calcareous crystals do not form continuous layers, but rather disintegrated layers. These observations suggest that diflubenzuron may block the polycondensation reactions to chitin chains in the OME secretory cells of the freshwater clam, *Anodonta cygnea*, producing unpolymerized chitin (unstabilized chitin) only. Diflubenzuron suspended at this concentration (200 mg/L), is not directly toxic to freshwater clam, *Anodonta cygnea*; however, a more persistent (chronic) exposure to this chemical compound may render the shell breakable.

Descriptors/Keywords: INSECTICIDE, CHITIN INHIBITOR, CYTOCHEMISTRY, SCANNING ELECTRON MICROSCOPY

Record - 708

EVALUATION OF ACYLUREA INSECTICIDES FOR THE CONTROL OF STIGMELLA MALELLA **MACIESLAK A**

FRUIT SCI REP (SKIERNIEWICE) 12 (3). 1985. 121-126.

Full Journal Title: Fruit Science Reports (Skierniewice)

Language: ENGLISH

ABSTRACT

Diflubenzuron, triflumuron and CME 134 appeared to be most effective for the control of *Stigmella malella* applied both before egg laying as well as during the initial stages of caterpillars feeding in the mines. An insecticide CGA 112913 was also effective when applied before and after egg laying or at the beginning of caterpillar hatching. Cyromazine was less effective. Applied at the same time as CGA

112913 caused the death of caterpillars but somewhat later than other insecticides. None of the investigated insecticides applied at the recommended concentrations appeared to be an effective ovicide.

Descriptors/Keywords: ORCHARD PEST, CYROMAZINE, DIFLUBENZURON, TRIFLUMURON, CME-134

Record - 709

STUDIES ON THE DISSIPATION OF DIFLUBENZURON AND METHOPRENE FROM SHALLOW PRAIRIE POOLS CANADA

MADDER D J; LOCKHART W L

CAN ENTOMOL 112 (2). 1980. 173-178.

Full Journal Title: Canadian Entomologist

Language: ENGLISH

ABSTRACT

A series of sod-lined pools were constructed and used to monitor repeated applications of diflubenzuron as Dimilin WP-25 and methoprene as Altosid SR-10. Diflubenzuron and methoprene disappeared rapidly from the pool water as determined by bioassays using *Aedes aegypti* (L.) (Culicidae) larvae and by GLC. Chemical assays for a diflubenzuron derivative were positive for several days; bioassay indicated the presence of diflubenzuron (or at least growth regulator activity) at levels toxic to mosquito larvae for up to 16 days. In contrast methoprene fell below GLC detection within 2 days although biological activity persisted for approximately a week after treatment. Neither parent compound should cause a long-term persistence hazard when used for mosquito control in Canadian prairie waters.

Descriptors/Keywords: GAS LIQUID CHROMATOGRAPHY, PERSISTENCE, HAZARD

Record - 710

MADDER, D. J. AND W. L. LOCKHART. 1978. A PRELIMINARY STUDY OF THE EFFECTS OF DIFLUBENZURON AND METHOPRENE ON RAINBOW TROUT SALMO GAIARDNERI. BULL. ENVIRON. CONTAM. TOXICOL. 20:66-70.

Record - 711

MADDER, D. J. 1977. THE DISAPPEARANCE FROM, EFFICACY IN AND EFFECT ON NON-TARGET ORGANISMS OF DIFLUBENZURON, METHOPRENE AND CHLORPYRIFOS IN A LENTIC ECOSYSTEM; THESIS SUBMITTED TO THE FACULTY OF GRADUATE STUDIES, UNIV. OF MANITOBA. .

Record - 712

MADDER, D.J. AND W. L. LOCKHART. 1977. THE EFFICACY OF DIMILIN AND ALTOSID ON RAINBOW TROUT (SALMO GAIARDNERI RICHARDSON); UNPUBLISHED.

Record - 713

MADHAVEN, K. 1974. LAB TRIALS WITH DIMILIN ON PILLBUGS AND BEE OR WAX MOTHS. REPORT THOMPSON-HAYWARD CHEMICAL CO. NO. D08767.

Record - 714

IMPACT OF DIFLUBENZURON SPRAY ON GYPSY MOTH LYMANTRIA DISPAR PARASITIDS IN THE FIELD

MADRID F J; STEWART R K

J ECON ENTOMOL 74 (1). 1981. 1-2.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Diflubenzuron, [1(4-chlorophenyl)-3-(2,6 difluorobenzoyl)-urea], an insect growth regulator for control of *L. dispar* (L.) was applied once at .03 kg AI [active ingredient] in 4.76 l water/ha using a Grumman Ag Cat aircraft. Gypsy moth larval mortality was high, .apprx. 50% after 1 wk and 100% after 10 days. *Apanteles melanoscelus* (Ratzeburg) mortality was .apprx. 80% after 2 wk. Tachinids showed 100% mortality.

Descriptors/Keywords: APANTELES-MELANOSCELUS, TACHINID, LARVAL MORTALITY, 14 CHLOROPHENYL-3-2 6-DIFLUOROBENZOYL UREA, AIRCRAFT

Record - 715

EFFECT OF DIFLUBENZURON ON THE ECONOMIC CHARACTERS OF SILKWORM

BOMBYX MORI L

MAGADUM S B; REMADEVI O K; BENCHAMIN K V

PROC NATL ACAD SCI INDIA SECT B (BIOL SCI) 61 (4). 1991. 389-394.

Full Journal Title: Proceedings of the National Academy of Sciences India Section B (Biological Sciences)

Language: ENGLISH

ABSTRACT

The effects of oral/topical application of 1, 5 and 10 ppm diflubenzuron on the larval and cocoon characters of silkworm, *Bombyx mori* L. were studied. There was no significant effect on the Vth age larval duration and pupal weight. The topical treatment of 1 ppm at 48 h and 5 ppm at 72 h after IVth moult showed higher larval weight and survival rate. The cocoon weight and shell weight was significantly higher in the batches treated topically with 5 ppm at 72 h and orally with 1 and 5 ppm daily. The cocoon yield was improved by 11.5% and 9.9% in the topical treatment of 1 ppm diflubenzuron at 48 h and 72 h, respectively. The possibility of the effect of diflubenzuron on the hormonal levels of silkworm are discussed.

Descriptors/Keywords: ORAL APPLICATION, TOPICAL APPLICATION, COCOON, YIELD HORMONE LEVEL

Record - 716

MAINI, P. AND K. V. DESEO. 1976. THIN LAYER CHROMATOGRAPHIC DETECTION OF DIFLUBENZURON IN BIOLOGICAL SAMPLES (ZEUZERA PYRINA, CONTROL). BULL. ENVIRON. CONTAM. TOXICOL. 16 (6): 702-708.

Record - 717

MAJORI, G., R. ROMI. AND A. ALI. 1985. TOXICITY OF THE IGR DIFLUBENZURON TO NEONATE ADULT, AND GRAVID FEMALE STRAUS (CLADOCERA: DAPHNIDAE) IN THE LABORATORY. PROC. PAP. ANNL. CONF. CALIF. MOSQ. AND VECTOR CONTROL ASSN. 1984 (PUB. 1985) (52ND). PP. 68-70. SACRAMENTO, CA.

Record - 718

MAJORI, G., G. MOLA, R. ROMI, G. PIERDOMINICI, M. COCCHI, AND A. TAMBURRO. 1983. EFFICACY OF DIFLUBENZURON IN THE CONTROL OF CULICIDS AND EFFECTS ON NON-TARGET ORGANISMS. PARASSITOLOGIA 23(1/3): 199-202.

Record - 719

MAJORI, G., G. MOLA, R. ROMI, G. PIERDOMINICI, M. COCCHI, AND A. TAMBURRO. 1982. EFFECTIVENESS OF DIFLUBENZURON IN THE CONTROL OF MOSQUITOES AND ITS EFFECTS ON NON-TARGET AQUATIC ORGANISMS (CULICIDAE, ITALY). PARASSITOLOGIA 23 (1/2). DEC. 1981. (PUB. 1982) PP. 199-204.

Record - 720

MAKHJANI, G. 1977. MEMO TO J. CUMMINS DATED MAY 2, 1977: RESULTS OF METHOD TRYOUT FOR DIMILIN IN COTTONSEED, MILK, BEEF LIVER, AND FISH. IN EPA CORRESPONDENCE FILE FOR PETITION NO. 7F1898.

Record - 721

FATE OF CARBON-14 LABELED DIFLUBENZURON ON COTTON AND IN SOIL

MANSAGER E R; STILL G G; FREAR D S

PESTIC BIOCHEM PHYSIOL 12 (2). 1979. 172-182.

Full Journal Title: Pesticide Biochemistry and Physiology

Language: ENGLISH

ABSTRACT

Aqueous suspensions and oil emulsions of a commercial [14C]diflubenzuron (N-[[4-chlorophenyl]amino]carbonyl]-2,6-difluorobenzamide) formulation (Dimilin W-25) remained on the leaf surface of greenhouse-treated plant tissues. Absorption, translocation and metabolism of the [14C]diflubenzuron were not significant. Less than 0.05% of the applied 14C was found in newly developed plant tissues 28 days after spray treatment. [14C]Diflubenzuron was degraded in soil. After 91 days, biometer flask studies showed that 28% of the 14C incorporated into the soil as [14C]diflubenzuron was recovered as 14CO₂. Major dichloromethane-soluble soil residues were identified as unreacted [14C]diflubenzuron and [14C]4-chlorophenylurea. A minor unknown degradation product cochromatographed with 2,6 difluorobenzoic acid. Insoluble 14C-residues increased with time and represented 67.8% of the residual 14C in the soil 89 days after treatment. Cotton plants grown for 89 days in [14C]diflubenzuron-treated soil contained only 3% of the 14C applied to the soil. Small quantities of acetonitrile-soluble [14C]4-chlorophenylurea were isolated from the foliar tissues. Root tissues contained small amounts of [14C]diflubenzuron and trace quantities of a minor 14C-product that chromatographed similarly to 2,6-difluorobenzoic acid. Most of the 14C in the plant tissues (84-93%) was associated with an insoluble residue fraction 89 days after treatment.

Descriptors/Keywords: DIMILIN W-25, INSECTICIDE, ABSORPTION, TRANSLOCATION, METABOLISM, DEGRADATION, RESIDUES, CHROMATOGRAPHY, CHLOROPHENYL UREA

Record - 722

RESIDUAL TOXICITY OF VARIOUS INSECTICIDAL FORMULATIONS TO THE COFFEE BERRY BORER HYPOTHENEMUS HAMPEI SCOLYTIDAE COLEOPTERA

MANSINGH A; RHODES L F

INSECT SCI APPL 6 (2). 1985. 209-212.

Full Journal Title: Insect Science and its Application

Language: ENGLISH

ABSTRACT

The persistence of 34 formulations in the green (G) and red (R) berries of *Collea arabica* var. *typica*, infested with female adult *H. hampei* were assayed by a dip-technique. The 3-day LC₅₀ 50% [lethal concentration] values in G and R (figures in parentheses) berries for thiodan EC [emulsifiable concentrate] 35 were 0.00284 (0.00327), and the relative ratio of values for other formulations were: perfeckthion 1.2 (2.1) > sudin 3.5 (3.2) > actellic 4.0 (3.6) > decis 4.1 (3.7) > thiodan EC 3 4.2 (4.2) > bidrin 5.8 (5.0) > malathion 5.8 (5.1) > lindane 5.8 (5.6) > ciodrin 5.9 (5.6) > folimat 6.0 (6.0) >

belmark 6.2 (6.3) > aldicarb 8.0 (9.7) > nexion 11.0 (12.0) > kelthane 13.5 (15.4) > tiovel 14.6 (16.3) > dursban 15.6 (22.0) > chlordane 17.8 (23.8) > methomyl 21.5 (24.3) > aldrin 25.1 (24.9) > supona 27.2 (26.5) > dimilin 29.0 (27.5) > methoxychlor 31.7 (92.2) > chlorfenvinphos 35.8 (92.5) > dieldrin 41.2 (93.8) > phosdrin 65.0 (94.7) > sevin 104.2 (118.0) > nexagan 106.4 (121.9) > bimarit 196.4 (301.7) > azodrin 271.2 (410.4) > fenitrothion 448.3 (417.0) > chlorpyrifos 448.8 (614.3) > gardona 514.6 (703.1). -fold more than the thiodan EC 35 values. The 7-day LC50 values for 29 formulations were ca 10-82% less than those of the 3-day values; the decrease in the values for leading formulations being thiodan EC 35 13.4 (8.3), perfeckthion 6.5 (39.9), carbicron 12.4 (10.6), thiodan EC 324.3 (16.4), malathion 35.2 (25.7), lindane 82.1 (76.9) and tiovel 59.6 (67). The values for the 17 least toxic formulations (except dimilin and bimarit) showed approx. 27-88% decrease during the last 4 days of observations.

Descriptors/Keywords: COFFEA-ARABICA-VAR-TYPICA, CHLORPYRIFOS FENITROTHION, CHLORDANE, METHOMYL, ALDRIN, THIODAN, PERFEKTHION, CARBICRON, BASUDIN, DURSBAN, ACTELLIC, DECIS, BIDRIN, MALATHION, LINDANE, TIOVEL, CIODRIN, FOLIMAT, BELMARK, ALDICARB, NEXION KELTHANE, SUPONA, DIMILIN, METHOXYCHLOR, CHLORFENVINPHOS, DIELDRIN, PHOSDRIN, SEVIN, NEXAGAN, BIMARIT, AZODRIN, CARDONA, INSECTICIDE

Record - 723

INTEGRATED MITE MANAGEMENT IN APPLES IN ISRAEL AUGMENTATION OF A BENEFICIAL MITE AND SENSITIVITY OF TETRANYCHID AND PHYTOSEIID MITES TO PESTICIDES

MANSOUR F; COHEN H; SHAIN Z

PHYTOPARASITICA 21 (1). 1993. 39-51.

Full Journal Title: Phytoparasitica

Language: ENGLISH

ABSTRACT

Augmentative releases of the phytoseiid mite *Typhlodromus athiasae* were evaluated during summer 1987 in an apple orchard designated to be maintained under an IPM (integrated pest management) regime. Evaluation for establishment and recovery 2 weeks after each release showed complete absence of the mite and high population density of the injurious tetranychid mites. It was suspected that pesticides that had been used to control key pests may have been the cause. Laboratory tests with the pesticides used showed that the insect growth regulators triflumuron and fenoxycarb and the fungicide triadimenol caused only slight mortality of the predacious mites *T. athiasae* (0-12%) and *Phytoseiulus persimilis* (6-10%), but a highly significant reduction in fecundity. Four days after treatment a reduction of 94%, 74% and 100% in fecundity of *T. athiasae*, and 2 days after treatment a reduction of 78%, 53% and 80% in fecundity of *P. persimilis* was brought about by triflumuron, fenoxycarb and triadimenol, respectively. On the other hand, 4 days after treatment there was a 27%, 16% and 9% increase in fecundity of the phytophagous mite *Tetranychus cinnabarinus* caused by triflumuron, fenoxycarb and triadimenol, respectively. Laboratory and field tests were carried out to evaluate 13 other pesticides as to their selectivity to *T. athiasae*. The compounds azinphos-methyl, penconazole, vamidothion and diflubenzuron were found to be relatively harmless to this beneficial mite and they replaced the materials mentioned above in the coming seasons in several orchards. This caused recovery in high density of the predacious mite, which allowed reduced application of acaricides and the achievement of integrated mite management.

Descriptors/Keywords: TYPHLODROMUS-ATHIASAE, PHYTOSEIULUS-PERSIMILIS, TETRANYCHUS-CINNABARINUS, INTEGRATED PEST MANAGEMENT, BIOLOGICAL CONTROL, PREDATORS, INSECTICIDES, FUNGICIDE, MORTALITY, FECUNDITY, SELECTIVITY

Record - 724

MARINE RESEARCH INSTITUTE. 1973. OYSTER BIOASSAYS. 96 HOUR EC50 WITH FERTILIZED EGGS. LARVA AND POST-JUVENILES. UNPUBLISHED STUDY RECEIVED FEB 10, 1976 UNDER 6G1744; SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 725

STUDIES ON THE BIOLOGICAL EFFECTS OF DIFLUBENZURON TH-6040 ON THE DESERT LOCUST SCHISTOCERCA GREGARIA

MARIY F M A; HUSSEIN E M K; EL-GUINDY M A; IBRAHIM E E-D H

INT PEST CONTROL 23 (5). 1981. 133-135.

Full Journal Title: International Pest Control

Language: ENGLISH

ABSTRACT

The insect growth regulator TH-6040 interferes with the formation of insect cuticle by inhibiting chitin synthesis and deposition in the endocuticle. TH-6040 should not be confused with the juvenile hormone analogs even though both interfere with the growth processes of insects. TH-6040, like the juvenoids, should be afforded testing procedures that would demonstrate its activity. TH-6040 and its analogs, which are referred to as 4th generation insecticides, will be of value in future pest control.

The present investigation was carried out to study the biological activity of such compounds on the normal development of nymphs, the reproductive potential of adult females and the eggs of the desert locust *S. gregaria* Forskal.

Descriptors/Keywords: INSECT GROWTH REGULATOR, ENDO CUTICLE, JUVENILE HORMONE, INSECTICIDE, PEST CONTROL, REPRODUCTION DEVELOPMENT

Record - 726

EVIDENCE FOR CHITIN SYNTHESIS IN AN INSECT CELL LINE

MARKS E P; BALKE J; KLOSTERMAN H

ARCH INSECT BIOCHEM PHYSIOL 1 (3). 1984. 225-230.

Full Journal Title: Archives of Insect Biochemistry and Physiology

Language: ENGLISH

ABSTRACT

Cells from the continuous MRRL-CH line derived from embryos of the tobacco hornworm [*Manduca sexta*] synthesized chitin. Digestion of the washed pellet from [¹⁴C]-N-acetylglucosamine-labeled cells by chitinase yielded a water-soluble labeled compound. The lyophilized residue from the supernatant of the chitin digestion was analyzed by gas-liquid chromatography as its trimethylsilyl derivative. The major component cochromatographed with derivitized chitobiose. The presence of chitobiose was confirmed by gas chromatography-mass spectrometry. The synthesis of chitin by this cell line is inhibited by diflubenzuron.

Descriptors/Keywords: MANDUCA-SEXTA, EMBRYONIC TISSUE, MRRL-CH CELL LINE, CHITINASE, ISOTOPE LABEL, GAS-LIQUID CHROMATOGRAPHY, DIFLUBENZURON

Record -727

MARSHALL, B. L. 1974. SUMMARY 96-HOUR LC50 EXPOSURE TO SHRIMP WITH TH-6040 W-25. REPORT MARINE RESEARCH INSTITUTE, MASSACHUSETTS.

Record - 728

MARSHALL, B. L. 1973. 96 HOURS LC50 STUDIES WITH TH-6040 TECHNICAL AND WETTABLE POWDER FORMULATIONS ON SALT WATER MINNOW, FRESH WATER TROUT AND SUNFISH. REPORT MARINE RESEARCH INSTITUTE, MASSACHUSETTS.

Record - 729

MARSHALL, B. L. AND B. L. HIEB. 1973. 96 HOUR LC50 SALMO GAIRDNERI, LEPOMIS MACROCHIRUS AND FUNDULUS HETEROCLITUS. UNPUBLISHED STUDY RECEIVED APR. 5, 1974 UNDER 148-1170; PREPARED BY MARINE RESEARCH INSTITUTE, SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 730

MARSHALL, D. B., D. J. PREE, AND B. D. MCGARVEY. 1988. EFFECTS OF BENZOYLPHENYLUREA INSECT GROWTH REGULATORS ON EGGS AND LARVAE OF THE SPOTTED TENTIFORM LEAFMINER PHYLLONORYCTER BLANCARDELLA (FABR.) (LEPIDOPTERA: GRACILLARIIDAE. THE CANADIAN ENTOMOL. JAN. 1988 120 (1) PP. 49-62.

Record - 731

EFFECTS OF THE INSECTICIDE DIFLUBENZURON ON SOIL MITES OF A DRY FOREST ZONE IN BRITISH-COLUMBIA CANADA

MARSHALL V G

RODRIGUEZ, J. G. (ED.). RECENT ADVANCES IN ACAROLOGY, VOL. 1. 5TH INTERNATIONAL CONGRESS OF ACAROLOGY, EAST LANSING, MICH., USA; AUG. 6-12, 1978. XXI+631P. ACADEMIC PRESS: NEW YORK, N.Y., USA, LONDON, ENGLAND. ILLUS. ISBN 0-12-592201-0. 0 (0). 1979. P129-134.

Language: ENGLISH
ABSTRACT

Descriptors/Keywords: ORGYIA-PSEUDOTSUGATA, PSEUDOTSUGA-MENZIESII, PINUS-PONDEROSA, PINUS-CONTORTA, MESOSTIGMATA ,PROSTIGMATA, ASTIGMATA, CRYPTOSTIGMATA, PREDATORS, SAPROPHAGE

Record - 732

EFFECTS OF DIFLUBENZURON ON THE LITTER SPIDER AND ORTHOPTEROID COMMUNITY IN A CENTRAL APPALACHIAN FOREST INFESTED WITH GYPSY MOTH (LEPIDOPTERA: LYMANTRIIDAE)

MARTINAT, P J; JENNINGS, D T; WHITMORE R C

ENVIRON. ENTOMOL 22 (5). 1993. 1003-1008.

Full Journal Title: Environmental Entomology

Language: ENGLISH
ABSTRACT

We searched for effects of diflubenzuron treatment on numbers and diversity of two groups of litter arthropods- spiders (Araneae) and orthopteroid insects (Orthoptera and Dictyoptera)-in a West Virginia hardwood forest infested with gypsy moth. We established sampling stations consisting of pitfall traps in treated and untreated plots (four each) and sampled for up to 75 d following spray. Variability in dependent variables (habitat differences) was reduced by performing principal components analysis on habitat variables and by introducing the principal components into the treatment effect models as covariates. A treatment effect was apparent from 21 to 42 d after spray in both spider and orthopteroid insect abundance, although the effect was significant on only two sample dates for orthopteroid insects. There was no treatment effect on species diversity for these two groups.

Descriptors/Keywords: ORTHOPTERA, DIFLUBENZURON, NONTARGET EFFECTS

Record - 733

EFFECT OF DIFLUBENZURON ON THE CANOPY ARTHROPOD COMMUNITY IN A CENTRAL APPALACHIAN FOREST

MARTINAT P J; COFFMAN C C; DODGE K; COOPER R J; WHITMORE R C

J ECON ENTOMOL 81 (1). 1988. 261-267.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Little is known of the effects of diflubenzuron on the nontarget forest arthropod community. We hypothesized that the use of this compound in gypsy moth, *Lymantria dispar* (L) (Lepidoptera: Lymantriidae), control may cause indiscriminate reduction of nontarget arthropods. This, in turn, might be an important loss of food for forest birds and small mammals. In a 2-yr replicated study we sampled canopy arthropods with pole pruners for up to 3 mo following application of diflubenzuron. Due to a strong trend over time and large between-tree variance in canopy arthropod abundance and taxonomic richness, intensive sampling was required to reveal the treatment effect. Besides reductions in gypsy moth larvae, significant reductions due to diflubenzuron application were found mainly in canopy macrolepidoptera and non-lepidopteran mandibulate herbivores. Sucking herbivorous insects, microlepidoptera, and predaceous arthropods were not affected.

Descriptors/Keywords: LYMANTRIA-DISPAR, INSECT GROWTH REGULATOR, NONTARGET ORGANISMS, BIRDS, MAMMALS

Record - 734

MARTINAT, P. J. , V. CHRISTMAN, R. J. COOPER, K. M. DODGE, R. C. WHITMORE, G. BOOTH, AND G. SEIDE. 1987. ENVIRONMENTAL FATE OF DIMILIN 25 W IN A CENTRAL APPALACHIAN FOREST. BULL. ENVIRO. CONTAM. AND TOXICOL. 39:142-149.

Record - 735

EFFECT OF DIFLUBENZURON ON AZOTOBACTER NITROGEN FIXATION IN SOIL

MARTINEZ TOLEDO M V; DE LA RUBIA T; MORENO J; GONZALEZ-LOPEZ J

CHEMOSPHERE 17 (4). 1988. 829-834.

Full Journal Title: Chemosphere

Language: ENGLISH

ABSTRACT

The effect of 100, 200, 300, 400 and 500 .mu.g diflubenzuron per gram of soil was studied in nonsterile soil incubated under aerobic conditions, and in sterilized soil inoculated with *Azotobacter vinelandii*. The presence of 100 to 500 .mu.g/g had a stimulatory effect on dinitrogen fixation in both nonsterile and sterile soil.

Descriptors/Keywords: AZOTOBACTER-VINELANDII, INSECTICIDE

Record - 736

DIFLUBENZURON AND THE ACETYLENE-REDUCTION ACTIVITY OF AZOTOBACTER VINELANDII

MARTINEZ-TOLEDO M V; GONZALEZ-LOPEZ J; DE LA RUBIA T; MORENO J; RAMOS-COR MENZANA A

SOIL BIOL BIOCHEM 20 (2). 1988. 225-256.

Full Journal Title: Soil Biology and Biochemistry

Language: ENGLISH

Descriptors/Keywords: INSECTICIDE

Record - 737

EFFECT OF DIFLUBENZURON ON THE INTRACELLULAR NUCLEOTIDE CONTENT AND ENERGY CHARGE OF AZOTOBACTER VINELANDII

MARTINEZ-TOLEDO M V; SALMERON V; GONZALEZ-LOPEZ J

CHEMOSPHERE 17 (7). 1988. 1363-1368.

Full Journal Title: Chemosphere

Language: ENGLISH

ABSTRACT

The effect of 100, 200, 300, 400 and 500 .mu.g/ml diflubenzuron on intracellular adenine nucleotide content and oxygen consumption was investigated with N-free and NH₄⁺- batch cultures of *Azotobacter vinelandii*. When the microorganisms were cultured in the presence of diflubenzuron the cells contained higher levels of ATP compared with control cells. However, microbial respiration was not affected as a consequence of the addition of the insecticide to the culture media.

Descriptors/Keywords: ENERGETICS, ATP, INSECTICIDE, ENVIRONMENTAL POLLUTANT

Record - 738

MARX, J. L. 1977. CHITIN SYNTHESIS INHIBITORS: NEW CLASS OF INSECTICIDES. SCIENCE 197: 1170-1172.

Record - 739

CHITIN SYNTHETASE AS A TARGET FOR THE DESIGN OF ANTI-FUNGAL AGENTS

MASSON J-M; GUILLERMET V; MARINOS E; LE GOFFIC F

EUR J MED CHEM 22 (5). 1987. 377-382.

Full Journal Title: European Journal of Medicinal Chemistry

Language: ENGLISH

ABSTRACT

In *Saccharomyces cerevisiae* cells permeabilized with toluene-ethanol, the activity of chitin synthetase, an important target for anti-fungal agents was compared with that of particulate extracts of the enzyme. The two preparations gave very similar results with regard to enzyme kinetics: chitin synthetase exhibited an allosteric behavior that could be shifted to hyperbolic Michaelis-Menten kinetics by the addition of 42 mM N-acetylglucosamine; the K_m of chitin synthetase for UDP-N-acetylglucosamine was 0.5 mM for both preparations. Polyoxin D strongly inhibited chitin synthetase in both preparations, whereas amphotericin B did not inhibit the enzymatic activity. Diflubenzuron exhibits an original mode of action, inhibiting the activation of chitin synthetase zymogen by trypsin, although it is not, by itself, a trypsin inhibitor. An analog of diflubenzuron, which is not active in vivo on insects, did not show any activity in our system either. Therefore, the permeabilized cells described herein are an interesting biological preparation for the screening of potential anti-fungal agents which target chitin synthetase.

Descriptors/Keywords: SACCHAROMYCES-CEREVISIAE, PHARMACODYNAMICS, POLYOXIN D, AMPHOTERICIN B, DIFLUBENZURON, ANTIFUNGAL-DRUG, ENZYME INHIBITOR-DRUG, UDP-N-ACETYLGLUCOSAMINE ZYMOGEN

Record - 740

OVICIDAL EFFECTS OF DIFLUBENZURON AND DIMATIF ON EGGS OF ACHETA DOMESTICA ORTHOPTERA

MATOLIN S; CHUDAKOVA I V

ACTA ENTOMOL BOHEMOSLOV 80 (5). 1983. 352-355.

Full Journal Title: Acta Entomologica Bohemoslovaca

Language: ENGLISH

ABSTRACT

Diflubenzuron [an insect growth regulator] affected embryogenesis and characteristically changed the shape of eggs. The compound was most effective when administered in the 1st half of embryogenesis, its effectiveness gradually decreasing in the 2nd half; the number of hatched larvae increased. Dimatif [a chemosterilant] blocked embryogenesis at cleavage division and at the time of blastoderm and germ band formation. It was most effective when applied in the 1st third of embryogenesis, hatchability being higher after treatment in the 2nd third; administration in the last third was ineffective.

Descriptors/Keywords: INSECT GROWTH REGULATOR, CHEMO STERILANT, EMBRYOGENESIS

Record - 741

EFFECTS OF DIFLUBENZURON AND DIMATIF ON EGGS OF CODLING MOTH CYDIA POMONELLA LEPIDOPTERA TORTRICIDAE

MATOLIN S; KULDOVA J

ACTA ENTOMOL BOHEMOSLOV 79 (4). 1982. 267-273.

Full Journal Title: Acta Entomologica Bohemoslovaca

Language: ENGLISH

ABSTRACT

The effect of diflubenzuron and dimatif on the eggs of *C. pomonella* (L.) was assayed using a spraying method in laboratory experiments. Both compounds caused changes in embryogenesis leading to inhibition of development in various stages. Diflubenzuron is effective in the phase of cuticle deposition, causing malformation in the abdominal part of affected larvae. The chemosterilizing effect of dimatif resulted in the blockage of embryogenesis, depending on time of treatment. Formation of malformed miniature embryos and abnormal pigmentation were frequent.

Descriptors/Keywords: EMBRYOGENESIS, PIGMENTATION

Record - 742

MATTA, J. F. 1976. THE EFFECT OF DIMILIN ON NON-TARGET ORGANISMS IN A MARSH COMMUNITY. REPORT ENVIRONMENTAL CONSULTANTS TO THOMPSON-HAYWARD CHEMICAL COMPANY.

Record -743

MATTHENIUS, J. C. 1975. EFFECTS OF DIMILIN ON HONEY BEES. NEW JERSEY DEPT. OF AGRICULTURE, UNPUBLISHED STUDY.

Record - 744

MATTHENIUS, J. C. 1975. DIMILIN AGAINST GYPSY MOTH SIMILARLY MONITORED FOR EFFECTS ON HONEY BEES. REPORT THOMPSON-HAYWARD CHEMICAL COMPANY NO. C3792, E60.

Record - 745

EFFECTS OF DIFLUBENZURON AND TUNICAMYCIN ON N ACETYLGLUCOSAMINYLTRANSFERASES IN PREPUPAE OF THE STABLE FLY STOMOXYS CALCITRANS

MAYER R T; CHEN A C

EXPERIENTIA (BASEL) 41 (5). 1985. 623-625.

Full Journal Title: EXPERIENTIA (Basel)

Language: ENGLISH

Descriptors/Keywords: MEMBRANE, SYNTHESIS, N ACETYLGLUCOSAMINE-1-PHOSPHATE
UDP-N-ACETYLGLUCOSAMINE, DOLICHOL, MONOPHOSPHATE

Record - 746

INHIBITION OF THE UPTAKE OF NUCLEOSIDES IN CULTURED HARDING PASSEY
MELANOMA CELLS BY DIFLUBENZURON

MAYER R T; NETTER K J; LEISING H B; SCHACHTSCHABEL D O

TOXICOLOGY 30 (1). 1984. 1-6.

Full Journal Title: Toxicology

Language: ENGLISH

ABSTRACT

Diflubenzuron (DFB) significantly inhibited the uptake of uridine, adenosine and cytidine, but not thymidine, in cultured Harding-Passey melanoma cells. Inhibition of nucleoside uptake was rapid (i.e., .ltoreq. 5 min) and could not be reversed by washing. DFB may affect membrane properties and .sbd.as shown by in vivo tests.sbd.growth of melanoma cells.

Descriptors/Keywords: MURINE, MELANOMA, HARDING PASSEY CELL, METABOLIC-DRUG,
MEMBRANE, EFFECT

Record - 747

CHARACTERIZATION OF MANNOSYL TRANSFERASES DURING THE PUPAL INSTAR OF
STOMOXYS CALCITRANS

MAYER R T; CHEN A C; DELOACH J R

ARCH INSECT BIOCHEM PHYSIOL 1 (1). 1983. 1-16.

Full Journal Title: Archives of Insect Biochemistry and Physiology

Language: ENGLISH

ABSTRACT

Particulate fractions (10,000g) from pupae of *S. calcitrans* transfer [14C]-mannose from GDP-[14C]-mannose to dolichol monophosphate and proteins, production of the mannosyl lipid was inhibited by Mn²⁺, UDP, GMP, GDP, and EDTA. The insect growth regulator diflubenzuron had no effect on mannosyl transferase activity. Dolichol monophosphate and Mg²⁺ stimulated mannosyl transferase activity. The mannosyl lipid phosphate was identified as mannosyl-phosphoryl-dolichol (Man-P-Dol). The apparent Km and Vmax values for the formation of Man-P-Dol using GDP-[14C]-Man while holding dolichol phosphate constant were 2.4 \pm 0.9 μ M and 9.4 \pm 2.3 pmol Man-P-Dol .cntdot. min⁻¹ .cntdot. mg⁻¹ protein, respectively. The apparent Km and Vmax values using dolichol phosphate while holding GDP-Man constant were 2.2 \pm 1.2 μ M and 18.5 \pm 1.7 pmol Man-P-Dol .cntdot. min⁻¹ .cntdot. mg⁻¹ protein.

Descriptors/Keywords: GDP, GMP, UDP, EDTA, LIPID, CARBON-14, MANGANESE, MAGNESIUM,
DIFLUBENZURON, ENZYME, KINETICS, MICHAELIS CONSTANT, MAXIMUM VELOCITY

Record - 748

CHITIN SYNTHESIS INHIBITING INSECT GROWTH REGULATORS DO NOT INHIBIT
CHITIN SYNTHASE EC-2.4.1.16

MAYER R T; CHEN A C; DELOACH J R

EXPERIENTIA (BASEL) 37 (4). 1981. 337-338.

Full Journal Title: EXPERIENTIA (Basel)

Language: ENGLISH

ABSTRACT

Tunicamycin, an antibiotic, and 5 insect growth regulators (diflubenzuron, Bay Sir 6874, Bay Sir

8514, CGA-19255 and Lilly 494) do not inhibit chitin synthase obtained from 4-day-old *Stomoxys calcitrans* pupae.

Descriptors/Keywords: STOMOXYS-CALCITRANS, PUPAE, TUNICAMYCIN, ANTIBIOTIC, DIFLUBENZURON, BAY SIR 6874, BAY SIR 8514, CGA-19255, LILLY 494

Record - 749

CHARACTERIZATION OF A CHITIN SYNTHASE EC-2.4.1.16 FROM THE STABLE FLY
STOMOXYS CALCITRANS

MAYER R T; CHEN A C; DELOACH J R

INSECT BIOCHEM 10 (5). 1980. 549-556.

Full Journal Title: Insect Biochemistry

Language: ENGLISH

ABSTRACT

A chitin synthase was isolated in 10,000 g pellets from homogenates of *S. calcitrans* (L.) pupae. The pH optimum was 6.5. Divalent cations such as Mg^{2+} , Mn^{2+} , Co^{2+} , Fe^{2+} , Cu^{2+} and Ca^{2+} were not required for activity. The reaction is linear with respect to time and protein concentration. The UDP-GlcNac[N-acetyl glucosamine]-supported reaction product was characterized as chitin by its insolubility in hot alkali, its resistance to trypsin and protease, the release of GlcN on its hydrolysis by acid, the liberation of GlcNac on its digestion by chitinase, and its inability to migrate into sodium dodecylsulfate-polyacrylamide gels. The apparent K_m and V_{max} for UDP-GlcNac were determined to be 31.7 μM and 135 \pm 10.3 $\mu mol\ hr^{-1}/mg$, respectively. GlcNac N,N'-diacetyl chitobiose, UTP, UDP and glycerine inhibit the reaction; glucose and ATP were slightly stimulatory. The chitin synthase probably exists as a zymogen since trypsin activated it. Polyoxin D inhibited the reaction only at high concentrations (1 mM). The insect growth regulator, diflubenzuron, which inhibits chitin synthesis in insects, had no effect on the reaction.

Descriptors/Keywords: POLYOXIN D, DIFLUBENZURON, METABOLIC-DRUG

Record -750

UTILIZATION OF IMAGINAL TISSUES FROM PUPAE OF THE STABLE FLY
STOMOXYS CALCITRANS FOR THE STUDY OF CHITIN SYNTHESIS AND SCREENING OF
CHITIN SYNTHESIS INHIBITORS

MAYER R T; MEOLA S M; COPPAGE D L; DELOACH J R

J ECON ENTOMOL 73 (1). 1980. 76-80.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Imaginal epidermal tissues from 4 day old pupae of *S. calcitrans* (L.) were used to develop an assay suitable for studying chitin synthesis and for screening chitin synthesis inhibitors. Four chitin precursors, D-glucose, D-glucosamine, D-fructose and N-acetyl-D-glucosamine [NAGA] were suitable substrates in this assay system. All these substrates were incorporated into chitin. Maximum incorporation occurred within 8 h or less. The apparent ISO_5 's [50% inhibition] of diflubenzuron (Dimilin; TH-6040; N-[(4-chlorophenyl)amino]carbonyl)-2,6-difluorobenzamide), Bay Sir 8514 (2-chloro-N-[[[4(trifluoromethoxy) phenyl] amino] carbonyl] benzamide), EL-494 (N-[[[5-(4-bromophenyl)-6-methyl-2-pyrazinyl]-amino]carbonyl]-2,6-dichlorobenzamide) and polyoxin D for inhibition of NAGA incorporation were 52, 440, 8600 and 13,000 nM, respectively.

Descriptors/Keywords: DIMILIN, DIFLUBENZURON, BAY SIR-8514, 2 CHLORO-N-4-TRIFLUOROMETHOXYPHENYLAMINOCARBONYL BENZAMIDE, EL-494 N-5-4-BROMOPHENYL-6-METHYL-2-PYRAZINYLAMINOCARBONYL-2 6-DICHLORO BENZAMIDE, POLYOXIN D, IMAGINAL, EPIDERMAL TISSUE, D GLUCOSE, D GLUCOSAMINE, D FRUCTOSE, N

ACETYL-D GLUCOSAMINE, ASSAY SYSTEM

Record - 751

MAYERS, M. E. 1975. DIMILIN USED FOR CONTROL OF MOSQUITOES; REPORT THOMPSON-HAYWARD CHEMICAL COMPANY. .

Record - 752

EFFECT OF DIFLUBENZURON ON LARVAL AND POST-LARVAL STAGES OF GARDEN HAIRY CATERPILLAR PERICALLIA RICINI LEPIDOPTERA ARCTIDAE

MAYURAVALLI V V L; REDDY G P V; MURTHY M M K

INDIAN J AGRIC SCI 59 (3). 1989. 193-194.

Full Journal Title: Indian Journal of Agricultural Sciences

Language: ENGLISH

Descriptors/Keywords: RICINUS-COMMUNIS, MORTALITY, INSECTICIDE, BIOLOGICAL CONTROL, CHEMICAL CONTROL, PESTS, CHITIN SYNTHESIS INHIBITOR, AGRICULTURE, CROP INDUSTRY

Record - 753

EVALUATION OF STAGE SPECIFICITY OF CHITIN-INHIBITORS FOR CONTROL OF TOBACCO CATERPILLAR SPODOPTERA LITURA

MAYURAVALLI V V L; PUNNAIAH K C; REDDY G P V

INDIAN J AGRIC SCI 57 (12). 1987. 956-957.

Full Journal Title: Indian Journal of Agricultural Sciences

Language: ENGLISH

Descriptors/Keywords: DIFLUBENZURON, SIR-8514, TOXICITY PESTS

Record - 754

MCALONAN, W. G. 1976. "EFFECTS OF TWO INSECT GROWTH REGULATORS ON SOME SELECTED SALT MARSH NON-TARGET ORGANISMS", MASTER'S THESIS, UNIV. OF DELEWARE, DEPT. OF ENTOMOLOGY AND APPLIED ECOLOGY. (UNPUBLISHED STUDY RECEIVED APR. 13, 1978, UNDER 20954-1, SUBMITTED BY ZOECON CORP. PALO ALTO, CA).

Record - 755

ACTIVITY OF DIMILIN ON THE DEVELOPMENTAL STAGES OF PHYLLOCOPTRUTA OLEIVORA AND ITS PERFORMANCE IN THE FIELD

MCCOY C W

J ECON ENTOMOL 71 (1). 1978 122-124.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

In the laboratory, Dimilin [TH-6040, 1-(4-chlorophenyl)-3-(2,6-difluorobenzoyl) urea], applied to the egg stage, inhibited molting of the citrus rust mite in the 2nd nymphal stage at dosages of 0.04-0.30 g AI[active ingredient]/l, but had no effect on eggs, adults or reproduction of F1 females exposed to the compound in their developmental stages. In the field Dimilin at a rate of 0.15 g AI/l, with and without oil, gave excellent control of citrus rust mite and protection of fruit [oranges] from external blemish for 21 wk.

Descriptors/Keywords: ORANGE, 1 4 CHLOROPHENYL-3-2 6-DIFLUOROBENZOYL UREA, INSECT GROWTH REGULATOR, OIL, MOLTING INHIBITION

Record -756

MCCOY, C. W. 1977. DIMILIN FOR CONTROL OF CITRUS MITE IN THE FIELD AND THE EFFECT ON STRAINS OF HIRSUTELLA THOMPSONII: DEUTEROMYCETES. REPORT THOMPSON-HAYWARD CHEMICAL COMPANY NO. C4358.

Record -757

MCCOY, C. W. 1976. DIMILIN W25 EVALUATED TO ASSESS ACTIVITY ON THE RUST MITE PATHOGENIC FUNGI HIRSUTELLA THOMPSONII: REPORT THOMPSON-HAYWARD CHEMICAL COMPANY NO. D09948 DE-3955.

Record - 758

MCGREGOR, H. E., K. J. KRAMER. 1976. ACTIVITY OF DIMILIN (TH-6040) AGAINST COLEOPTERA IN STORED WHEAT AND CORN. J. ECON. ENTOMOL. 69: 479-480.

Record - 759

DRIFT RESPONSE OF BLACK FLY SIMULIUM VENUSTUM LARVAE TO DIMILIN

MCKAGUE A B; PRIDMORE R B

MOSQ NEWS 39 (3). 1979. 678-679.

Full Journal Title: Mosquito News

Language: ENGLISH

Descriptors/Keywords: NOTE, LARVICIDE, STREAM, BRITISH-COLUMBIA CANADA

Record - 760

MCKAGUE, A. B. AND R. B. PRIDMORE. 1978. TOXICITY OF ALTOSID AND DIMILIN (INSECT GROWTH REGULATOR WHICH HAVE ACTIVITY AGAINST DIPTERA) TO JUVENILE RAINBOW TROUT AND COHO SALMON. BULL. ENVIRON. CONTAM. TOXICOL. 20:167-169.

Record -761

EFFECTS OF ALTOSID AND DIMILIN ON BLACK FLIES DIPTERA SIMULIIDAE
LABORATORY AND FIELD TESTS

MCKAGUE A B; PRIDMORE R B; WOOD P M

CAN ENTOMOL 110 (10). 1978. 1103-1110.

Full Journal Title: Canadian Entomologist

Language: ENGLISH

ABSTRACT

Adult emergence of *Simulium verecundum* S. and J. and *S. decorum* Walk. was reduced 58-94% by exposure of late instar larvae to 0.1 ppm Altosid or Altosid SR-10 for 1 h. Pupae were not affected by the presence of 0.1 ppm Altosid SR-10 in the rearing water. Adult emergence of *S. verecundum* was reduced 95% when mixed larval instars were reared in the presence of 0.001 ppm Dimilin. Last instar larvae died as a result of abnormal metamorphosis. Black fly mortality was 86-100% with 1 h exposures to 0.1-0.2 ppm Dimilin and 100% with a 15 min exposure to 1 ppm at 22 +/- 2 degree. C, lower temperatures giving similar results. Release of Altosid over a 48 h period from formulated blocks gave a concentration of 0.002-0.006 ppm in a small stream. Emergence of adults was completely suppressed for 23 days 18 m downstream and 17 days 43 m downstream. Applications of 1 ppm Dimilin for 15 min

to 2 streams resulted in the gradual elimination of black fly larvae from artificial substrates, a high reduction in adult emergence and the formation of abnormal larvae following the tests. The maximum concentration of Dimilin detected in the water was 0.31 ppm during application; however, submerged vegetation residues as high as 18.9 ppm were found 1 h following the 2nd application, decreasing to less than 0.05 ppm 14 days later.

Descriptors/Keywords: SIMULIUM-VERECUNDUM, SIMULIUM-DECORUM, VEGETATION RESIDUES, INSECT GROWTH REGULATORS, STREAM, ABNORMAL METAMORPHOSIS, DEATH, MORTALITY

Record - 762

MCKAGUE, A. B. 1977. NEW METHODS OF CONTROL OF BITING FLIES IN NORTHERN CANADA. REPORT THOMPSON-HAYWARD CHEMICAL COMPANY.

Record - 763

CONTACT TRANSFER OF DIFLUBENZURON DIMILIN BY BOLL WEEVILS AND THE RELATION OF SITE OF APPLICATION AND EFFECT ON EGG HATCH

MCLAUGHLIN R E

ENTOMOL EXP APPL 23 (2). 1978 171-176.

Full Journal Title: Entomologia Experimentalis et Applicata

Language: ENGLISH

ABSTRACT

The growth-regulating chemical diflubenzuron, N(4-chlorophenyl)-N-(2,6-difluorobenzoyl)urea [TH=6040] was applied to tarsi or genital sternites of male or female boll weevils, *Anthonomus grandis* Boheman, that were then placed with untreated weevils of the opposite sex; applied to genital sternites of either males or females and then placed with the egg-laying females; placed directly on the genital sternites of egg-laying females; or applied directly to the soft integument under the elytra. TH-6040 applied to the soft dorsal integument produced a higher level of inhibition of egg hatch than did tarsal contact treatment. Application to males had a distinct effect but much smaller, on egg hatch of eggs from their mates than did direct application to the females. Application to hard cuticle (genital sternites) was less effective than to soft integument (i.e., there was less inhibition of hatch and the recovery rate was faster).

Descriptors/Keywords: ANTHONOMUS-GRANDIS, N-4 CHLOROPHENYL-N-2 6-DIFLUOROBENZOYL UREA, TH-6040, APPLICATION, GENITAL STERNITES, SOFT INTEGUMENT, EGG HATCH INHIBITION, TARSI

Record - 764

DOSE RESPONSES OF THE BOLL WEEVIL TO TOPICAL FORMULATIONS OF TH-6040

MCLAUGHLIN R E

J GA ENTOMOL SOC 12 (4). 1977 369-373.

Full Journal Title: Journal of the Georgia Entomological Society

Language: ENGLISH

ABSTRACT

The growth-regulating chemical Thompson-Hayward TH-6040 (N-(4-chlorophenyl)-N-(2,6-difluorobenzoyl)urea, Dimilin, which interferes with egg hatch in adult boll weevils *Anthonomus grandis* Boheman was tested to determine the effective dose of topical application and the effects of the carrier formulation. Doses by topical application that inhibited egg hatch were much larger than doses by ingestion. Water was an effective carrier, but crude cottonseed oil was highly effective. The effectiveness of TH-6040 increased to a maximum during the 1st 3 days after application, then gradually declined. This indicates that absorption through the cuticle required several days, followed by an elimination,

deactivation or some other mechanism of decreasing concentrations of TH-6040 in the insects.

Descriptors/Keywords: ANTHONOMUS-GRANDIS, DIMILIN, GROWTH REGULATOR, COTTONSEED OIL, EGG HATCH, CUTICLE ABSORPTION

Record - 765

MCLEESE, D. W. 1976 TOXICITY STUDIES WITH LOBSTER LARVAE AND FRESHWATER CRAYFISH IN 1975. REPORT THOMPSON-HAYWARD CHEMICAL COMPANY.

Record - 766

SOYBEAN GLYCINE-MAX L. MERRILL THOMAS SOYBEAN LOOPER PSEUDOPPLUSIA INCLUDENS WALKER VELVETBEAN CATERPILLAR ANTICARSIA GEMMATALIS HUEBNER SOYBEAN LOOPER AND VELVETBEAN CATERPILLAR CONTROL 1990

MCPHERSON R M; MOSS R B

THOMAS, J. H. (ED.). INSECTICIDE AND ACARICIDE TESTS, VOL. 16. 327P.

ENTOMOLOGICAL SOCIETY OF AMERICA: LANHAM, MARYLAND, USA. ILLUS. PAPER. 0 (0). 1991. 219-220.

Language: ENGLISH

Descriptors/Keywords: POUNCE, DIPEL, LARVIN, DIMILIN

Record - 767

THE EFFECT OF SOME BENZOYLPHENYLUREAS ON THE LARVAE OF EARIAS INSULANA **MEISNER J; KLEIN M; ASCHER K R S**

PHYTOPARASITICA 14 (1). 1986. 3-10.

Full Journal Title: Phytoparasitica

Language: ENGLISH

ABSTRACT

Diiflubenzuron, PH 60-38, PH 60-43, penfluron (PH 60-44), PH 60-45, triflumuron, chlorfuazuron (IKI-7899), teflubenzuron (CME 134), XRD-473 and Dowco 439 were tested for their efficacy against the larvae of the spiny boll-worm, *Earias insulana* (Boisd.), in laboratory experiments. The compounds were incorporated at different concentrations in an artificial diet and 5-day-old larvae were introduced and grown on the treated diets until pupation and adult emergence. Teflubenzuron was active at 0.1 ppm, chlorfuazuron at 0.75 ppm and PH 60-38 at 10 ppm; triflumuron and diiflubenzuron were active only at 50 ppm; all the rest of the compounds were even less active. When cotton bolls were dipped in teflubenzuron and offered to 6-day-old larvae in the laboratory, only 4% and 10% of the larvae penetrated inside the bolls treated with 50 and 25 ppm a.i., respectively, whereas 68% penetrated inside untreated bolls.

Descriptors/Keywords: DIFLUBENZURON, PENFLURON, TRIFLUMURON, CHLORFUAZURON, TEFLUBENZURON, XRD-473, DOWCO 439, GROWTH REGULATORS

Record - 768

CONTEMPORARY FRONTIERS IN CHEMICAL PESTICIDE RESEARCH

MENN J J

J AGRIC FOOD CHEM 28 (1). 1980. 2-8.

Full Journal Title: Journal of Agricultural and Food Chemistry

Language: ENGLISH

Descriptors/Keywords: REVIEW, CHLORINATED HYDRO CARBONS, CARBAMATES, SYNTHETIC

PYRETHROID, DIFLUBENZURON, HERBICIDE

Record - 769

INHIBITION OF CELLULAR PROLIFERATION OF IMAGINAL EPIDERMAL CELLS BY DIFLUBENZURON IN PUPAE OF THE STABLE FLY STOMOXYS CALCITRANS

MEOLA S M; MAYER R T

SCIENCE (WASH D C) 207 (4434). 1980. 985-987.

Language: ENGLISH

Descriptors/Keywords: NOTE, CHITIN SYNTHESIS, BLOCK, IMAGINAL, CUTICLE

Record - 770

MERRIAM, T. L. AND R. C. AXELL. 1983. RELATIVE TOXICITY OF CERTAIN PESTICIDES TO LAGENIDIUM GIGANTEUM (OOMYCETES: LAGENIDIALES), A FUNGAL PATHOGEN OF MOSQUITO LARVAE. ENV. ENTOMOL. 12(2): 515-521.

Record - 771

MERRIAM, T. L. 1982. CHEMICAL AND MICROBIAL CONTROL OF AEDES TAENIORHYNCHUS WIEDEMANN (DIPTERA: CULICIDAE). IN: VOLUME 43/06-B OF DISSERTATION ABSTRACTS INTERNATIONAL.

Record - 772

MERRICKS, D. L. 1975. ISOLATION, PURIFICATION AND IDENTIFICATION OF TH-6040 AND ITS METABOLITES FROM TISSUES AND EGGS OF POULTRY EXPOSED TO 14C-TH06040: LABORATORY NO. 5E-7373-B. UNPUBLISHED STUDY RECEIVED FEB. 10, 1976 UNDER 6F1744; PREPARED BY CANNON LABORATORIES, INC. SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO.

Record - 773

SYNERGISM BETWEEN CERTAIN ADJUVANTS AND TWO INSECT GROWTH REGULATORS AGAINST THE LARVAE OF THE COTTON LEAFWORM SPODOPTERA LITTORALIS

MESBAH H A; HASSAN N A; RADWAN H S A; ABDEL-MOHYMEN M R; ABDEL-FATTAH M S
BULL ENTOMOL SOC EGYPT ECON SER 0 (13). 1982-1983 (1985). 25-30.

Full Journal Title: Bulletin of the Entomological Society of Egypt Economic Series

Language: ENGLISH

ABSTRACT

In laboratory tests, six adjuvants were evaluated for their influence on the efficiency of two insect growth regulators (IGRs) against the 2nd and 4th instar larvae of the cotton leafworm, *Spodoptera littoralis* (Boisd.). Larvae were fed on castor oil leaves dipped in combinations of each IGR and each tested adjuvant at concentrations of 10, 20, 50 and 100 ppm (a.i.) for both. Also tests were carried out on the separate IGRs and adjuvants. Toxicity data after 72 h feeding on treated leaves revealed no direct toxicity for any adjuvant when tested alone. Most of Diflubenzuron/adjuvants combinations showed slight to moderate synergism especially with the 4th instar larvae.

Descriptors/Keywords: DIFLUBENZURON, TOXICITY, SYNERGISM

Record - 774

METCALF, R. L., P. LU, AND S. BOWLUS. 1975. DEGRADATION AND ENVIRONMENTAL FATE OF 1-(2,6-DIFLUOROBENZOYL)-3-(4-CHLOROPHENYL) UREA. J. AGRIC. FOOD CHEM. 23(3): 359-364.

Record - 775

MEYERS, M. E. 1977. EVALUATION OF DIMILIN FOR THE CONTROL OF MOSQUITOES. REPORT THOMPSON-HAYWARD CHEMICAL COMPANY.

Record - 776

INSECT GROWTH REGULATORS AS CONTROL AGENTS AGAINST STORED PRODUCT INSECTS

MIAN L S; MULLA M S; HUSSAIN N

SARHAD J AGRIC 6 (3). 1990. 287-298.

Full Journal Title: Sarhad Journal of Agriculture

Language: ENGLISH

ABSTRACT

This review provides useful information on the potential of insect growth regulators (IGRs) as protectants of stored food products against insect infestations. A major portion of this paper is devoted to methoprene, fenoxycarb, diflubenzuron and triflumuron. Based on the available data, the actions of these compounds on the eggs, larvae, pupae and adults of storage insects are evaluated with discussions on inhibition of adult emergence and delayed effects. Data on the residual activity and residue persistence of these IGRs support that these compounds possess a good desirable residual activity, imparting a season-long or longer protection of stored products against insect infestations. The subject of mammalian toxicity and prospects of insect resistance to IGRs are appropriately discussed in this review.

Descriptors/Keywords: MAMMAL, DIFLUBENZURON, FENOXYCARB, METHOPRENE, TRIFLUMURON, POTENTIAL TOXICITY

Record - 777

EFFECTS OF INSECT GROWTH REGULATORS ON THE GERMINATION OF STORED WHEAT

MIAN L S; MULLA M S

PROT ECOL 5 (4). 1983. 369-374.

Full Journal Title: Protection Ecology

Language: ENGLISH

Descriptors/Keywords: 1-4 TRI FLUOROMETHOXYPHENYL-3-2-CHLOROBENZOYL UREA, METHOPRENE, DIFLUBENZURON, SOLVENT, FORMULATION

Record - 778

PERSISTENCE OF 3 INSECT GROWTH REGULATORS IN STORED WHEAT

MIAN L S; MULLA M S

J ECON ENTOMOL 76 (3). 1983. 622-625.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

The presistence of residues of 3 insect growth regulators (IGRs): BAY SIR 8514 [1-(4-trifluoromethoxyphenyl)-3-(2-chlorobenzoyl)urea], diflubenzuron, and methoprene, in stored wheat was studied over a period of 12-23 mo. Based on mosquito bioassays using 4th-stage larvae of *Culex quinquefasciatus* Say, the residues of BAY SIR 8514 at 1, 5 and 10 ppm declined by almost 50% during the 23-mo. posttreatment storage. Diflubenzuron at these concentrations showed a residue loss of 40-50% during the 23-mo. study period. The residues of methoprene in stored wheat were determined by GLC over a period of 12 mo. The losses in residues at 1, 5 and 10 ppm were 61, 66 and 62%, respectively.

Descriptors/Keywords: CULEX-QUINQUEFASCIATUS, RESIDUE, BAY-SIR-8514, 1-4 TRI FLUOROMETHOXYPHENYL-3-2-CHLOROBENZOYL UREA, DIFLUBENZURON, METHOPRENE, CHROMATOGRAPHY

Record - 779

BIOLOGICAL ACTIVITY OF INSECT GROWTH REGULATORS AGAINST 4 STORED PRODUCT COLEOPTERANS

MIAN L S; MULLA M S

J ECON ENTOMOL 75 (1). 1982. 80-85.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Four insect growth regulators (IGR), BAY SIR 8514 [(1-4-trifluoromethoxyphenyl)-3-(2-chlorobenzoyl) urea], diflubenzuron, methoprene and MV-678 [2-methoxy-9-(p-isopropylphenyl)-2,6-dimethylnonane], applied at 5 ppm to wheat flour or grain, were evaluated against *Oryzaephilus surinamensis* (L.), *Tribolium castaneum* (Herbst), *Rhyzopertha dominica* (F.) and *Sitophilus oryzae* (L.). BAY SIR 8514 and diflubenzuron were highly active against the eggs and younger larvae of *O. surinamensis*, *T. castaneum* and *R. dominica*. Methoprene, besides its ovicidal action against *O. surinamensis* and *R. dominica*, caused substantial mortality in the full-grown larvae of the 3 spp. BAY SIR 8514 and methoprene also affected the subsequent progeny production of parent adults preexposed to IGR-treated food for 2 wk. MV-678 was the least active compound tested. Diflubenzuron and methoprene had no adverse effects on the development of *S. oryzae* inside grain kernels infested with parent adults 1 day after grain was treated. In grain treated with BAY SIR 8514, diflubenzuron and methoprene, and infested with this insect after 12 mo. of posttreatment storage, the development of this species was arrested significantly. BAY SIR 8514 and diflubenzuron were more active against the eggs and younger larvae, with methoprene showing activity against all stages from egg to preemergent adults of this species. In testing IGR against internal feeders, it is important to allow for penetration of the active ingredients into the inner portions of grain kernels before assessing effects.

Descriptors/Keywords: SITOPHILUS-ORYZAE, ORYZAEPHILUS-SURINAMENSIS, TRIBOLIUM-CASTANEUM, RHYZOPERTHA-DOMINICA, WHEAT, BAY-SIR-8514, 1-4 TRI FLUOROMETHOXYPHENYL-3-2-CHLOROBENZOYL UREA, DIFLUBENZURON, METHOPRENE, MU-678, 2 METHOXY-9-P-ISOPROPYLPHENYL-2 6-DIMETHYL NONANE, TREATED FOOD, EGG LARVA, OVICIDE, MORTALITY

Record - 780

RESIDUAL ACTIVITY OF INSECT GROWTH REGULATORS AGAINST STORED PRODUCT BEETLES IN GRAIN COMMODITIES

MIAN L S; MULLA M S

J ECON ENTOMOL 75 (4). 1982. 599-603.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

The insect growth regulators (IGRs) BAY SIR 8514 [1-(4-trifluoro-methoxyphenyl)-3-(2-chlorobenzoyl)urea], diflubenzuron, methoprene and MV-678 [2-methoxy-9-(p-isopropylphenyl)-2,6-dimethylnonane] were evaluated for residual activity against 2 internal feeders, *Rhyzopertha dominica* (F.) and *Sitophilus oryzae* (L.) in stored grains for 1 yr. The 1st 3 at 1-10 ppm each gave effective control (98-100%) of *R. dominica* in stored wheat, barley and corn for > 12 mo. posttreatment and MV-678 was the least active. In wheat grain, BAY SIR 8514 at 0.1 and 0.5 ppm was effective against *R. dominica* for 4 and 6 mo. posttreatment, respectively. Diflubenzuron at 0.1 and 0.5 ppm provided 97-98% control for 6 mo. posttreatment. The residual activity of methoprene at these lower

concentrations did not result in appreciable control of *R. dominica*. Data on the residual activity of BAY SIR 8514, diflubenzuron and methoprene against *S. oryzae* in stored wheat showed that diflubenzuron was more active than BAY SIR 8514 and methoprene. At 5 and 10 ppm, this compound gave 100% control at 2-wk to 12-mo. posttreatment intervals. At 1 ppm, its residual activity (93.7%) at 2-wk intervals gradually increased to as high as 99.8% at 12 mo. posttreatment. BAY SIR 8514 at 1 ppm showed an almost similar trend in residual activity, ranging between .apprx. 70% control at 2 wk posttreatment and > 99% control at 12 mo. posttreatment. At 5 and 10 ppm, this compound provided 96 to > 99% control at 2 wk to 12 mo. posttreatment. Methoprene tested at 1, 5 and 10 ppm against *S. oryzae* did exhibit residual action which increased with time. Its activity was low and even at 10 ppm it gave only 80-93% control at various intervals during the test period.

Descriptors/Keywords: RHYZOPERTHA-DOMINICA, SITOPHILUS-ORYZAE, WHEAT, BARLEY, CORN, BAY-SIR-8514, DIFLUBENZURON, METHOPRENE, MV-678, 2 METHOXY-9-P-ISOPROPYLPHENYL-2 6-DIMETHYL NONANE

Record - 781

MLAO, J. C. 1980. SUPPRESSION OF PINE CATERpillARS, DENDROLIMUS SUPERANS BUTLER WITH DIMILIN. FOREST. SCI. AND TECHNOLOGY. 11:25-26.

Record - 782

INSECTICIDE EFFECTS ON TRICHOGRAMMA-SPP HYMENOPTERA TRICHOGRAMMATIDAE EMERGENCE

MICHELETTI S M F B

AN SOC ENTOMOL BRAS 20 (2). 1991. 265-269.

Full Journal Title: Anais da Sociedade Entomologica do Brasil

Language: PORTUGUESE

ABSTRACT

Studies were made on the action of different insecticides, using the largest recommended dosages for tests of cotton, on emergence of *Trichogramma* spp. The experiment was conducted at EMBRAPA/CNPA (National Cotton Research Center), in Campina Grande, Paraiba, Brazil. The experimental design was entirely randomized. Eggs of *Sitotroga cerealella* (Oliv., 1818) (Lepidoptera: Gelechiidae), 10 days after being parasitized by *Trichogramma* were counted and submitted to the following treatments (ina. i./ha); cypermethrin 25 EC, 62, 5g; deltamethrin 2,5 EC, 10, 0g; endosulfan 35 EC, 700 g; demeton-s-methyl 250EC, 200g; parathion-methyl 600 EC, 600 g; carbaryl 850 WP, 1700 g; malathion 1000EC, 2000 g; diflubenzuron 25 WP, 15g and azinphos-ethyl 400 EC, 800g, replicated five times. The insecticide applications were made with a hand operated Knapsack sprayer. The evaluation was based on the counting of eggs containing emergence holes, 14 days after the eggs have been parasitized and 4 days after the treatment. The products applied did not cause harmful effects of *Trichogramma* spp.

Descriptors/Keywords: SITOTROGA-CEREALELLA, COTTON CROP, CYPERMETHRIN, DELTAMETHRIN, ENDOSULFAN, DEMETON-S-METHYL PARATHION, CARBARYL, MALATHION, DIFLUBENZURON

Record - 783

DIFLUBENZURON BOLUS FOR CONTROL OF FLY LARVAE

MILLER J A; KNAPP F W; MILLER R W; PITTS C W; WEINTRAUB J

J AGRIC ENTOMOL 3 (1). 1986. 48-55.

Full Journal Title: Journal of Agricultural Entomology

Language: ENGLISH

ABSTRACT

A sustained-release bolus containing 10% diflubenzuron (Dimilin, N-[[[4-

chlorophenyl)amino]carbonyl]-2,6-difluorobenzamide) was highly effective in preventing development of larval horn flies, *Haematobia irritans* (Linnaeus), face flies, *Musca autumnalis* De Geer, and to a lesser degree stable flies, *Stomoxys calcitrans* (Linnaeus), and house flies, *Musca domestica* (Linnaeus), in the manure of treated cattle. Both molded and compressed boluses provided 14-17 weeks control of horn flies and face flies. When steers weighing ca. 300 kg were treated with compressed boluses (either two 25-g, one 50-g, or two 50-g boluses), the manure was unsuitable for horn fly development for 14-17 weeks posttreatment. Treatment with two 25-g boluses was insufficient for stable fly inhibition; however, two 50-g boluses provided near minimum effective dosages. The 25-g bolus, when applied either as a single bolus or as a group of four boluses to large (ca. 700 kg) Holstein cows, prevented development of face flies in the manure. Also, the erosion rate of these boluses in rumen-fistulated animals was determined.

Descriptors/Keywords: HAEMATOBIA-IRRITANS, MUSCA-AUTUMNALIS, STOMOXYS-CALCITRANS, MUSCA-DOMESTICA, CATTLE, DIMILIN, N-4 CHLOROPHENYLAMINOCARBONYL-2 6-DIFLUOROBENZAMIDE, INSECT GROWTH REGULATOR

Record - 784

METHODS FOR CONTROL OF THE ANGORA GOAT BITING LOUSE

MILLER J A; CHAMBERLAIN W F; OEHLER D D

SOUTHWEST ENTOMOL 10 (3). 1985. 181-184.

Full Journal Title: Southwestern Entomologist

Language: ENGLISH

ABSTRACT

When Angora goats were treated 6 wk after shearing, we found that pourons of diflubenzuron, fenvalerate, and phenthoate provided complete control for up to 18 wk posttreatment. Lice populations treated with fenthion as a spoton were reduced but never eliminated during the test period. A fenvalerate neckband gradually increased in efficacy to provide > 90% of control at 10-14 wk posttreatment. Ivermectin injections failed to control lice. This study indicates that several insecticides are effective for control of Angora goat biting lice, *Bovicola limbatus* (Gervais), and can be applied in a convenient and safe manner.

Descriptors/Keywords: BOVICOLA-LIMBATUS, DIFLUBENZURON, FENVALERATE, PHENTHOATE, FENTHION, NECKBAND, IVERMECTIN

Record - 785

MILLER, J. A., M. L. BEADLES, AND R. O. DRUMMOND. 1979. SUSTAINED RELEASE BOLUS FORMULATIONS CONTAINING INSECT GROWTH REGULATORS FOR CONTROL OF LIVESTOCK PESTS (MONOSTEASARIN, CARNUBA WAX, BARIUM SULFATE, METHOPRENE DIFLUBENZURON. US PATENT - US PATENT OFFICE AUG. 28, 1979 (4,166,107) 4P. WASHINGTON, DC.

Record - 786

EFFICACY OF BACILLUS THURINGIENSIS AND DIFLUBENZURON ON DOUGLAS-FIR AND OAK FOR GYPSY MOTH CONTROL IN OREGON USA

MILLER J C; WEST K J

J ARBORIC 13 (10). 1987. 240-242.

Full Journal Title: Journal of Arboriculture

Language: ENGLISH

Record - 787

DIFLUBENZURON BOLUSES FOR FLY CONTROL ON DAIRY CATTLE

MILLER R W; HALL R D; WILLIAMS R E; PICKENS L G; DOISY K A

J AGRIC ENTOMOL 8 (2). 1991. 117-126.

Full Journal Title: Journal of Agricultural Entomology

Language: ENGLISH

ABSTRACT

Four experiments were conducted in which diflubenzuron boluses were administered to lactating dairy cows. In the first experiment, involving 56 high-producing Holstein cows in Maryland [USA], the administration of two commercial diflubenzuron (Vigilante) boluses did not affect milk yield or the percentage of fat or protein in milk when compared with untreated control cows. In a second experiment conducted in Maryland, diflubenzuron orated using a flaked (EF) or powdered formulation (EP), were administered to dairy cows fed rations containing three different forage-to-concentrate ratios (85:15, 50:50, or 30:70) at the rate of one bolus per cow. Manure bioassays from cows administered either the EF or EP boluses and fed the 50:50 or 30:70 rations showed .gtoreq. 86% mortality of face flies for a period of 12 wk postbolusing. This level of mortality was obtained for only 8 wk in manure from cattle fed the 85:15 ration. House fly mortality was < 90% for all treatment groups 6 wk postbolusing. Two additional field trials using the two types of boluses were conducted in Indian and Missouri. House fly mortality in manure from cows bolused in both these states was similar to that in Maryland. Mortality of horn flies in manure from cattle administered EF boluses in Indiana and Missouri was .gtoreq. 86% 10 wk postbolusing. Horn fly mortality was 47% and 49% in Indiana and Missouri, respectively, for cattle receiving the EP boluses. In general, there was a lower number of horn flies on the bolused dairy herds in Indiana and Missouri. Face fly counts on cattle in both states were low. There was no indication that farms on which cattle were bolused had lower populations of stable flies or house flies.

Descriptors/Keywords: HORN FLY, HOUSE FLY, FACE FLY, STABLE FLY, MILK YIELD, FAT CONTENT, PROTEIN CONTENT, FLY MORTALITY, MANURE BIOASSAY, INDIANA, MISSOURI MARYLAND, USA

Record - 788

FIELD EVALUATION OF DIFLUBENZURON BOLUSES FOR FLY CONTROL ON PASTURED CATTLE

MILLER R W; KNAPP F W; HALL R D; WILLIAMS R E; DOISY K E; WEBB J

J AGRIC ENTOMOL 7 (4). 1990. 305-320.

Full Journal Title: Journal of Agricultural Entomology

Language: ENGLISH

ABSTRACT

Diflubenzuron boluses were administered to herds of pastured cattle in Indiana, Kentucky, Maryland, and Missouri [USA] in 1986, 1987, and 1988. Commercial boluses and experimental single bolus formulations were evaluated. On most herds, the boluses provided .gtoreq. 80% control of immature stages of the face fly, *Musca autumnalis* De Geer, and the horn fly, *Haematobia irritans* (Linnaeus), in the manure for at least 10 wk. Experimental single-dose boluses were as effective as commercial ones. In general, the boluses provided good control of adult horn flies in states with a high population of this species, but were less effective in controlling face flies on cattle.

Descriptors/Keywords: MUSCA-AUTUMNALIS ,HAEMATOBIA-IRRITANS, INSECT GROWTH REGULATOR, INSECTICIDE, LARVAE POPULATION

Record - 789

CGA-19255 6 AZIDO-N-CYCLOPROPYL-N'-ETHYL-1 3 5 TRIAZINE-2 4-DIAMINE AND CGA-72662 N CYCLO PROPYL-1 3 5 TRIAZINE-2 4 6-TRIAMINE EFFICACY AGAINST FLIES AND POSSIBLE MODE OF ACTION AND METABOLISM

MILLER R W; CORLEY C; COHEN C F; ROBBINS W E; MARKS E P

SOUTHWEST ENTOMOL 6 (3). 1981. 272-278.

Full Journal Title: Southwestern Entomologist

Language: ENGLISH

ABSTRACT

Two triazine compounds, 6-azido-N-cyclopropyl-N'-ethyl-1,3,5-triazine-2,4 -diamine (CGA-19255) and N-cyclopropyl-1,3,5-triazine-2,4,6-triamine (CGA-72662), were administered to Holstein cattle. Results obtained suggest that CGA-19255 is converted to CGA-72662 in the digestive tract of the cow and that the latter compound is the active one in killing face fly, *Musca autumnalis* De Geer, or house fly, *M. domestica* L., larvae seeded into the feces. The rate of feeding of either compound needed to kill .apprx. 95% of face fly and house fly larvae is 0.25 and 0.5-1.0 mg AI[active ingredient]/kg body wt per day, respectively. In vitro experiments indicated that neither compound had significant activity against coleopteran or lepidopteran species but confirmed the activity found against dipterans. In these tests, CGA-72662 was 3-10 times more active than CGA-19255 against newly hatched house fly and yellow fever mosquito, *Aedes aegypti* (L.), larvae. Both compounds inhibited chitin synthesis in a cultured cockroach leg regenerate system but neither was as active as diflubenzuron.

Descriptors/Keywords: MUSCA-AUTUMNALIS, MUSCA-DOMESTICA, AEDES-AEGYPTI, HOLSTEIN CATTLE, COLEOPTERA, LEPIDOPTERA, DIPTERA, COCKROACH, DIGESTIVE TRACT, DIFLUBENZURON, CHITIN INHIBITION

Record - 790

EFFECTS OF FEEDING DIFLUBENZURON TO YOUNG MALE HOLSTEIN CATTLE

MILLER R W; CECIL H C; CAREY A M; CORLEY C; KIDDY C A

BULL ENVIRON CONTAM TOXICOL 23 (4-5). 1979. 482-486.

Full Journal Title: Bulletin of Environmental Contamination and Toxicology

Language: ENGLISH

Descriptors/Keywords: SERUM, TESTOSTERONE, INSECTICIDE, SPERM CONCENTRATION, UNCHANGED ABNORMALITIES, NEGATIVE REGRESSION ANALYSIS, LIBIDO

Record - 791

MILLER, R. W., C. CORLEY, D. DEHLER, ET AL. 1976. FEEDING TH-6040 TO CATTLE: RESIDUES IN TISSUES AND MILK AND BREAKDOWN IN MANURE. J. AGRIC. FOOD. CHEM. 24 (3): 687-688.

Record - 792

MILLER, R. W., C. CORLEY, S. R. SHUFELT. 1976. EFFECTS OF FEEDING TH-6040 TO TWO BREEDS OF CHICKENS. J. OF ECON. ENTOMOL. 69(6): 741-742.

Record - 793

MILLER, R. W., C. CORLEY, K. R. HILL. 1977. FEEDING TH-6040 TO CHICKENS: EFFECT ON LARVAL HOUSE FLIES IN MANURE AND DETERMINATION OF RESIDUES IN EGGS. J. OF ECON. ENTOMOL. 68(2): 181-182.

Record - 794

MORTALITY OF FALL ARMYWORM SPODOPTERA FRUGIPERDA LEPIDOPTERA NOCTUIDAE EGGS LARVAE AND ADULTS EXPOSED TO SEVERAL INSECTICIDES ON COTTON

MINK J S; LUTTRELL R G

J ENTOMOL SCI 24 (4). 1989. 563-571.

Full Journal Title: Journal of Entomological Science

Language: ENGLISH

ABSTRACT

Mortality of eggs, first, third, and fifth instars and adults of fall armyworm (FAW), *Spodoptera frugiperda* (J.E. Smith), after exposure to several insecticides on cotton indicated that the FAW is susceptible to most insecticides currently used to control *Heliothis* spp. Most insecticides tested exhibited ovicidal activity. High mortality of first instar larvae was observed for most treatments, including the biological insecticide, *Bacillus thuringiensis* (Berliner). More variation in mortality among treatments was observed in third and fifth instars than in first instars. Pyrethroid, carbamate, and organophosphorous insecticides resulted in higher mortality than did *B. thuringiensis*. Diflubenzuron, an insect growth regulator, was as effective as commonly used insecticides against third and fifth instar larvae when mortality was observed at pupation. Third instar FAW placed on plant tissue from the upper section of cotton plants sprayed in field situations suffered higher mortality than those placed on plant tissue from lower sections in the plant canopy. Inadequate deposition of insecticide in the lower portions of the cotton plant appears to be a limiting factor in control of FAW larvae on cotton.

Descriptors/Keywords: HELIOTHIS, BACILLUS-THURINGIENSIS, PYRETHROID, CARBAMATE, DIFLUBENZURON, ORGANOPHOSPHORUS INSECTICIDE

Record - 795

EFFECTS OF DIFLUBENZURON ON THE DEVELOPMENT OF LARVAE OF MANDUCA SEXTA IN THE LABORATORY

MISCH D W; DE LELLO E

J ELISHA MITCHELL SCI SOC 101 (1). 1985 (1986). 9-14.

Full Journal Title: Journal of the Elisha Mitchell Scientific Society

Language: ENGLISH

ABSTRACT

Larvae of *Manduca sexta* were selected early in the fourth instar in groups of 30 and were subsequently fed a synthetic diet containing from 10-1 to 105 ppm of diflubenzuron. Larvae received the chemical for 48 hours and were observed until they died or emerged as adults. Treated larvae died at the time of molting into the 5th instar, during the prepupal period, or during the pupal period. All adults which emerged were smaller than untreated controls. No toxic effects were noted during the intermolt period even at concentrations of diflubenzuron up to 105 M.

Descriptors/Keywords: MOLTING, METAMORPHOSIS, INSECTICIDE, MORTALITY

Record - 796

CELLULAR RESPONSES OF INSECT INTESTINAL CELLS TO INHIBITORS OF CHITIN

MISCH D W; DE LELLO E; BISHOFF S

22ND ANNUAL MEETING OF THE AMERICAN SOCIETY FOR CELL BIOLOGY, BALTIMORE, MD., USA, NOV. 30-DEC. 4, 1982. J CELL BIOL 95 (2 PART 2). 1982. 402A.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: ABSTRACT, BACILLUS-THURINGIENSIS, TOXIN, TOBACCO HORNWORM LARVA, DIFLUBENZURON, METABOLIC-DRUG, GUT PARALYSIS

Record - 797

MITCHELL, E. B., M. E. MERKL, T. B. DAVICH, AND M. A. BROWN. 1983. FIELD PERFORMANCE OF BOLL WEEVILS (COLEOPTERA: CURCULIONIDAE) STERILIZED WITH DIFLUBENZURON AND GAMMA IRRADIATION (ANTHONOMUS GRANDIS GRANDIS) J. OF ECON. ENTOMOL. 76(2):294-297.

Record - 798

STERILITY OF BOLL WEEVILS ANTHONOMUS GRANDIS GRANDIS IN THE FIELD FOLLOWING TREATMENT WITH DIFLUBENZURON AND GAMMA IRRADIATION

MITCHELL E B; MERKL M E; WRIGHT J E; DAVICH T B; HEISER R F

J ECON ENTOMOL 73 (6). 1980. 824-826.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Over 600,000 mixed sex sterile *A. grandis grandis* Boheman that were sterilized by feeding them diflubenzuron treated diet for 6 days and then irradiating them were released in 2.4 ha of cotton in south Florida [USA]. A boll weevil population was not established in the field which indicated that all of the insects were sterilized.

Descriptors/Keywords: COTTON, FLORIDA USA

Record - 799

INFLUENCE OF FIELD APPLICATIONS OF DIFLUBENZURON ON LONGEVITY FERTILITY AND ATTRACTIVENESS OF RELEASED IRRADIATED BOLL WEEVILS

ANTHONOMUS GRANDIS GRANDIS

MITCHELL E B; MCGOVERN W L; HUDDLESTON P M

J GA ENTOMOL SOC 14 (3). 1979. 251-254.

Full Journal Title: Journal of the Georgia Entomological Society

Language: ENGLISH

ABSTRACT

The attractiveness and longevity of released males of *A. grandis grandis* Boheman, irradiated as pupae, were not affected by the exposure to foliar applications of diflubenzuron. Egg hatch from normal virgin females paired with these males was greatly reduced.

Descriptors/Keywords: EGG HATCH

Record - 800

INHIBITION OF DNA SYNTHESIS IN BOLL WEEVILS ANTHONOMUS GRANDIS STERILIZED BY DIMILIN

MITLIN N; WIYGUL G; HAYNES J W

PESTIC BIOCHEM PHYSIOL 7 (6). 1977 559-563.

Full Journal Title: Pesticide Biochemistry and Physiology

Language: ENGLISH

ABSTRACT

When boll weevils *A. grandis* Boheman, were treated with dimilin (N-(4-chlorophenyl)-N'-(2,6-difluorobenzoyl), DNA biosynthesis was inhibited in the female, but neither RNA nor protein synthesis was affected. Treated males showed a difference in effect in lipoprotein synthesis, whereas no significant difference was demonstrated with females. Testicular growth was inhibited in some of the males. Chemosterilant effects may be due in part to inhibition of DNA biosynthesis by dimilin.

Descriptors/Keywords: N-4 CHLOROPHENYL-N-2 6-DIFLUOROBENZOYL UREA, CHEMO STERILANT, PROTEIN SYNTHESIS, LIPID SYNTHESIS, TESTES GROWTH

Record - 801

BINDING OF UDP-N-ACETYLGLUCOSAMINE TO BRUSH-BORDER MEMBRANE VESICLES OF MIDGUT EPITHELIAL CELLS OF THE CABBAGE ARMYWORM MAMESTRA BRASSICAE

MITSUI T; NOBUSAWA C; TOKUDA K; TADA M

J PESTIC SCI 11 (1). 1986. 65-70.

Full Journal Title: Journal of Pesticide Science

Language: ENGLISH

ABSTRACT

The brush-border membrane vesicles were isolated from the midgut epithelial cells of the last instar cabbage armyworm larvae (*Manestra brassicae*). It was observed that ¹⁴C-UDP-N-acetylglucosamine (UDP-AGA) bound fast to the vesicles at the optimum pH of 7.0. Almost 90% of the binding was inhibited by polyoxin D. Chitin was synthesized by the vesicles in vitro in the presence of chitodextrin as a primer. These facts suggested that much of the binding was based on the ¹⁴C-UDP-AGA-chitin synthetase binding, whose activity was stronger at 20.degree. than 25.degree. C. On the other hand, the chitin synthesis by the vesicles progressed much faster at higher temperatures, indicating that the turnover of the binding would be faster at higher temperatures. The polyoxin D-treated vesicles retained the binding activity at the optimum pH 7.5, although UDP-AGA's binding activity became weak about one tenth of the original. The results led to a conclusion that the brush-border membrane vesicles had two substances bound to UDP-AGA, one would be chitin synthetase and the other a UDP-AGA transporter. However, the amount of UDP-AGA bound to the polyoxin D-treated vesicles was too small to conclude that the binding was based on the UDP-AGA transporter.

Descriptors/Keywords: CHITIN SYNTHETASE, CHITIN SYNTHESIS, DIFLUBENZURON, INSECT GROWTH REGULATOR, MODE OF ACTION

Record - 802

CHITIN SYNTHESIS INHIBITORS BENZOYLARYLUREA INSECTICIDES

MITSUI T

JPN PESTIC INF 0 (47). 1985. 3-7.

Full Journal Title: Japan Pesticide Information

Language: ENGLISH

Descriptors/Keywords: REVIEW, DIFLUBENZURON, TOXICITY, MODE OF ACTION, INSECT GROWTH REGULATOR, METABOLIC FATE, ENVIRONMENTAL FATE

Record - 803

INHIBITION OF UDP-N-ACETYLGLUCOSAMINE TRANSPORT BY DIFLUBENZURON ACROSS BIOMEMBRANES OF THE MIDGUT EPITHELIAL CELLS IN THE CABBAGE ARMYWORM MAMESTRA BRASSICAE

MITSUI T; TAKA M; NOBUSAWA C; YAMAGUCHI I

J PESTIC SCI 10 (1). 1985. 55/60.

Full Journal Title: Journal of Pesticide Science

Language: ENGLISH

ABSTRACT

The midguts from the last instar larvae of *M. brassicae* L., were incubated in the Grace's medium containing ¹⁴C-N-acetylglucosamine with or without diflubenzuron. Accumulation of ¹⁴C-UDP-N-acetylglucosamine was observed in the diflubenzuron-treated midguts. The phospholipid composition was examined in the midguts after they had been incubated in the presence of ¹⁴C-acetic acid as a precursor. No difference was observed between the diflubenzuron-treated and the untreated midguts. When the midguts were turned inside out, ligated at the both ends, incubated in the presence of ¹⁴C-N-acetylglucosamine, and then UDP-N-acetylglucosamine in the medium as well as in the tissues and chitin were separately analyzed, the total radioactivity transported through the microvilli membranes in the diflubenzuron-treated midguts was less than that in the control midguts. ¹⁴C-UDP-N-acetylglucosamine was accumulated in the treated tissues. The mode of action of diflubenzuron seems to be the inhibition of UDP-N-acetylglucosamine transport through the biomembrane.

Descriptors/Keywords: INSECT GROWTH REGULATOR, MODE OF ACTION

Record - 804

MODE OF INHIBITION OF CHITIN SYNTHESIS BY DIFLUBENZURON IN THE CABBAGE ARMYWORM MAMESTRA BRASSICAE

MITSUI T; NOBUSAWA C; FUKAMI J-I

J PESTIC SCI (NIHON NOYAKU GAKKAISHI) 9 (1). 1984. 19-26.

Language: ENGLISH

ABSTRACT

No morphological difference was found in the midgut epithelial cells between the normal and the diflubenzuron-treated last instar larvae of *M. brassicae* L. Diflubenzuron and polyoxin D strongly inhibited chitin synthesis in the peritrophic membranes of the midgut when glucosamine or N-acetylglucosamine was applied, as a precursor of chitin, either inside or outside the midgut. When UDP-N-acetylglucosamine was injected into the midgut with polyoxin D, chitin synthesis was blocked, but not with diflubenzuron. UDP-N-acetylglucosamine would be formed from glucosamine or N-acetylglucosamine in the epithelial cells and then move to the outer face of the biomembranes of the cells to form chitin. Diflubenzuron may act as an inhibitor of the transport system of UDP-N-acetylglucosamine across biomembranes, since an accumulation of UDP-N-acetylglucosamine is known in insects treated with diflubenzuron. Na⁺-K⁺ ATPase and Ca²⁺-Mg²⁺ ATPase were not affected by the insecticide.

Descriptors/Keywords: MID GUT, UDP N ACETYL GLUCOSAMINE, POLYOXIN D, INSECT GROWTH REGULATOR, MEMBRANE TRANSPORT, ATPASE

Record - 805

INHIBITION OF CHITIN SYNTHESIS BY DIFLUBENZURON IN MAMESTRA BRASSICAE

MITSUI T; NOBUSAWA C; FUKAMI J-I

J PESTIC SCI (NIHON NOYAKUGAKU KAISHI) 6 (2). 1981. 155-162.

Language: ENGLISH

ABSTRACT

Diflubenzuron inhibits chitinous cuticle formation in *M. brassicae* in vivo. When epidermis from the last instar larvae was cultured in vitro in the presence of diflubenzuron or polyoxin D, both compounds inhibited chitin synthesis with I50 [median inhibition] of 8.9 .times. 10⁻⁹ M for diflubenzuron and 8.8 .times. 10⁻⁸ M for polyoxin D. When larvae were injected with 14C-GA-[D-[1-14C-1 glucosamine hydrochloride] after treatment of diflubenzuron, 14C-UDP-AGA [uridine diphospho-N-acetyl-D-1[U-14C]-glucos amine] accumulates in vivo. Diflubenzuron blocks the terminal polymerization step in chitin synthesis. Chitin synthetase activity in cell-free extracts was inhibited by polyoxin D but not by diflubenzuron. Enzyme preparations from animals treated with diflubenzuron were .apprx. 1/10 as active as those from the controls.

Descriptors/Keywords: POLYOXIN D, RADIOACTIVE TECHNIQUE, TERMINAL POLYMERIZATION

Record - 806

INHIBITION AND CHITIN SYNTHESIS BY DIFLUBENZURON IN MANDUCA SEXTA LARVAE

MITSUI T; NOBUSAWA C; FUKAMI J-I; COLINS J; RIDDIFORD L M

J PESTIC SCI (NIHON NOYAKUGAKU KAISHI) 5 (3). 1980. 335-342.

Language: ENGLISH

ABSTRACT

Diflubenzuron inhibits cuticle production in final instar *Manduca* larvae when fed or applied topically.

After topical application of 5 .mu.g diflubenzuron to the newly molted 5th instar larvae, the rate of cuticle deposition decreased to only 2/3 of normal thickness. In vitro it inhibited both endocuticle deposition and ecdysterone-initiated pupal cuticle synthesis by the epidermis. Both effects are due to its inhibition [ID50 (median inhibitory dose) = 1.1 .times. 10-9 M] of glucose or glucosamine incorporation into chitin.

Descriptors/Keywords: ECDYSTERONE, GLUCOSE

Record - 807

THE EFFECT OF DIFLUBENZURON ON THE EGG LAYING AND VITELLOGENESIS IN FEMALE CULEX PIPIENS QUINQUEFASCIATUS

MITTAL P K; KOHLI V K

RES BULL PANJAB UNIV SCI 39 (1-2). 1988. 93-100.

Full Journal Title: Research Bulletin of the Panjab University Science

Language: ENGLISH

ABSTRACT

Dipping of 4th instar larvae in nonlethal dose, 0.001 ppm did not significant sterility. Oral feeding with 0.05% and 0.10% DFB delayed egg laying, and 40% eggs laid hatched abnormally or did not hatch at all. Morphologically, there was decrease in size of the ovary; and many developing oocytes or mature ova were either found abnormal or contracted. With higher doses there was pycnosis of nuclei of follicular epithelial cells. The yolk formation and laying of eggs got delayed on account of delayed incorporation of carbohydrates proteins from the extraocyte sources.

Descriptors/Keywords: INSTAR LARVA, CARBOHYDRATE PROTEIN, YOLK FORMATION, INSECTICIDE

Record - 808

DIFLUBENZURON AN ANTIMOLTING INSECT GROWTH REGULATOR IN CULEX PIPIENS FATIGANS

MITTAL P K; KOHLI V K

UTTAR PRADESH J ZOOL 5 (1). 1985. 94-96.

Full Journal Title: Uttar Pradesh Journal of Zoology

Language: ENGLISH

ABSTRACT

Acetonic aqueous doses of 0.01 and 0.04 ppm diflubenzuron cause 100% mortality in the mosquito, *Culex pipiens fatigans* whereas 0.001% ppm dose causes very little mortality. The cause of mortality is due to incapability of larvae, pupae and adults to moult completely.

Descriptors/Keywords: MORTALITY

Record - 809

MIURA, T., C. H. SCHAFFER, R. M. TAKAHASHI, AND F. S. MULLIGAN III. 1976. EFFECTS OF THE INSECT GROWTH INHIBITOR, DIMILIN, ON HATCHING OF MOSQUITO CULEX PIPIENS QUINQUEFASCIATUS EGGS. J. ECON. ENTOMOL. 69: 655-658.

Record - 810

MIURA, T., AND R. M. TAKAHASHI. 1976. EFFECTS OF DIMILIN ON NON-TARGET ORGANISMS. REPEATED UTILIZATIONS ON THE SAME HABITATS AS A MOSQUITO LARVACIDE", PROC. PAPER ANN. CONF. CALIF. MOSQ. CONTROL ASSN. 44TH. PP. 86-89.

Record - 811

MIURA, T., W. D. MURRAY, R. M. TAKAHASHI. 1975. EFFECTS OF DIMILIN ON NON-TARGET ORGANISMS IN EARLY-SPRING CULEX TARSALIS LARVAL HABITATS. PROC. PAPER. ANN. CONF. CALIF. MOSQ. CONTROL ASSN. 43RD:79-83.

Record - 812

MIURA, T., AND R. M. TAKAHASHI. 1975. EFFECTS OF THE IGR, TH-6040 ON NON-TARGET ORGANISMS WHEN UTILIZED AS A MOSQUITO CONTROL AGENT. MOSQUITO NEWS 35(2): 154-159.

Record - 813

MIURA, T. 1974. BIOLOGICAL ACTIVITY OF TH-6040 AGAINST ORGANISMS ASSOCIATED WITH MOSQUITO BREEDING HABITATS IN IRRIGATED PASTURES. REPORT MOSQUITO CONTROL RESEARCH LABORATORY, UNIV. OF CALIFORNIA.

Record - 814

MIURA, T., R. M. TAKAHASHI. 1974. TOXICITY OF TH-6040 TO FRESHWATER CRUSTACEA AND THE USE OF A TOLERANCE INDEX AS A METHOD OF EXPRESSING SIDE EFFECTS ON NON-TARGET. PROC. PAP. ANNU. CONF. CALIF. MOSQ. CONT. ASSOC. 42 PP. 177-180.

Record - 815

MIURA, T., AND R. M. TAKAHASHI. 1974. INSECT DEVELOPMENTAL INHIBITORS: EFFECTS OF CANDIDATE MOSQUITO CONTROL AGENTS ON NON-TARGET AQUATIC ORGANISMS. ENVIRON. ENTOMOL. 3 (4):636-636.

Record - 816

EFFECTIVENESS OF NUCLEAR POLYHEDROSIS VIRUS AND INSECTICIDES AGAINST THE COTTON LEAFWORM SPODOPTERA LITTORALIS BOISD

MOAWED S M; ELNABRAWY I M

INSECT SCI APPL 8 (1). 1987. 89-94.

Full Journal Title: Insect Science and its Application

Language: ENGLISH

ABSTRACT

The relative pathogenicity and toxicity of nuclear polyhedrosis virus of the cotton leafworm, *Spodoptera littoralis* (Boisd.) (SLNPV) and three pesticides, namely DC-702, DC-703 and DC-800, were investigated against the second- and fourth-instar larvae of *S. littoralis*. Results revealed that the second instar was more susceptible to the action of all treatments than the four instar. Among the tested insecticides, DC-703 was most toxic for either instars, followed by DC-800 and DC-702 for the second instar larvae. Fourth-instar larvae were more susceptible to DC-702 and DC-800, respectively. Combination of virus and DC-702 gave increased larval mortality when compared with the effects of either alone. On the other hand, antagonistic effect occurred when DC-703 was combined with NPV. This may be due to the high percentage of diflubenzuron (4.8%) as one of the components of DC-703, while DC-702 contains only 2.4% diflubenzuron. Synergistic interactions of mixtures containing low concentrations of SLNPV and DC-702 or Dc-800 may be effective against *S. littoralis* and more safe for other biotic control agents.

Descriptors/Keywords: DEVELOPMENTAL STAGE, DIFLUBENZURON

Record - 817

RESISTANCE TO DIFLUBENZURON IN THE CODLING MOTH LEPIDOPTERA TORTRICIDAE
MOFFITT H R; WESTIGARD P H; MANTEY K D; VAN DE BAAN H E

J ECON ENTOMOL 81 (6). 1988. 1511-1515.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Codling moth, *Cydia pomonella* (L.), from pear in the Medford, Oreg. [USA], area showed resistance to the chitin synthesis inhibitor diflubenzuron in laboratory and orchard studies. In the orchard this was shown in 1984 and 1985 as 54.4-63.6% damage at harvest compared with 0.8-2.0% damage occurring in another similarly treated orchard. Concentration-mortality studies later in 1985 and early 1986 showed about a 2-fold difference in susceptibility (LC_{50} = 52.6 and 59.1 mg [AI]/liter versus 37.9 and 28.2 mg [AL]/liter) between the two populations based on the response of eggs of the F3 and F4 laboratory-reared generations to residues on the treated fruits. When results from exposure of eggs to a single discriminating concentration of diflubenzuron (112.3 mg [AL]/liter) were compared, the diflubenzuron-resistant population showed a significantly higher survival (.ltoreq. 29.2-fold). Studies in the same orchard in 1986 again showed a lack of control (35% damage) with a normal concentration. Higher concentrations of 2 times and 4 times normal showed 15% and 8% damage, respectively. This is the first report of resistance to diflubenzuron in the codling moth. This occurrence of resistance is unusual because it appeared the first time this population was exposed to diflubenzuron without previous exposure to related chemicals, whereas the population in another similarly treated orchard retained a high degree of susceptibility after approximately 8 yr of exposure to diflubenzuron. The causes or mechanisms for this development of resistance to diflubenzuron in the codling moth remain to be determined.

Descriptors/Keywords: CYDIA-POMONELLA, PEAR SUSCEPTIBILITY, EGGS, RESISTANCE, CHITIN SYNTHESIS INHIBITOR, INSECTICIDE, POPULATION, AGRICULTURE CROP, INDUSTRY, FRUITS PESTS, INSECT GROWTH REGULATOR

Record - 818

EFFECTS OF RESIDUES OF CHITIN-SYNTHESIS INHIBITORS ON EGG HATCH AND
SUBSEQUENT LARVAL ENTRY OF THE CODLING MOTH CYDIA POMONELLA LEPIDOPTERA
OLETHREUTIDAE

MOFFITT H R; MANTLEY K D; TAMAKI G

CAN ENTOMOL 116 (8). 1984. 1057-1062.

Full Journal Title: Canadian Entomologist

Language: ENGLISH

ABSTRACT

In laboratory and field studies with the codling moth, *C. pomonella* (L.), TH 6043 and TH 6044, experimental benzoylphenyl urea chitin-synthesis inhibitors, were as effective as diflubenzuron in reducing egg hatch and subsequent larval entry when eggs were deposited on previously treated fruits or foliage. All 3 compounds exhibited extended residual activity, with significant reductions in egg hatch occurring over a 19 wk period. TH 6045 exhibited little activity against codling moth. All compounds tested were relatively ineffective in reducing egg hatch or subsequent larval entry when they were applied topically to deposited eggs, except for the red ring stage of development which was slightly affected.

Descriptors/Keywords: BENZOYLPHENYL UREA, DIFLUBENZURON

Record - 819

COMPATIBILITY OF METARHIZIUM ANISOPLIAE-VAR-ANISOPLIAE WITH CHEMICAL
PESTICIDES

MOHAMED A K A; PRATT J P; NELSON F R S

MYCOPATHOLOGIA 99 (2). 1987. 99-106.

Full Journal Title: Mycopathologia

Language: ENGLISH

ABSTRACT

The effects of various insecticides on the mycelial growth, sporulation and conidial germination of *Metarhizium anisopliae* var. *anisopliae* isolate E9 were studied in the laboratory. Chlorpyrifos was the most toxic organophosphate to mycelial growth and sporulation at all concentrations. Temephos, malathion and leptophos were highly toxic to sporulation while malathion was the most inhibitory to germination. The carbamates, carbofuran, methomyl and oxamyl were moderately toxic to mycelial growth and sporulation while oxamyl had an adverse effect on germination. The pyrethroids (pyrethrin, permethrin and resmethrin) and the insect growth regulators (diflubenzuron and methoprene) were not inhibitory to the various developmental stages of isolate E9. The chlorinated hydrocarbons (chlordane, lindane and toxaphene) were more deleterious than all other insecticide groups tested. Among the fungicides, benomyl and maneb produced the greatest inhibition.

Descriptors/Keywords: ENTOMOPATHOGEN, HYDROCARBONS, DIFLUBENZURON, PYRETHROIDS BENOMYL, CHLORPYRIFOS, MANEB, TEMEPHOS, MALATHION, LEPTOPHOS, METHOPRENE, GROWTH REGULATORS, SPORULATION, COMPATIBILITY

Record - 820

THE RESIDUAL EFFECT OF SOME INSECTICIDES ON PLUTELLA XYLOSTELLA LARVAE IN THE GREENHOUSE

MOHAMAD R; IBRAHIM Y; CHEONG C W

PERTANIKA 3 (1). 1980. 10-12.

Full Journal Title: Pertanika

Language: ENGLISH

ABSTRACT

The residual effect of 5 insecticides on *P. xylostella* (L) larvae was measured on *Brassica rapa* in the laboratory. Acephate was the most persistent and gave at least 80% larval mortality 8 days after application. Bendiocarb, *Bacillus thuringiensis* and methamidophos gave 50% larval mortality 6 days after treatment. Diflubenzuron demonstrated poor insecticidal activity. Larval mortality was 20% at all times.

Descriptors/Keywords: BRASSICA-RAPA, BACILLUS-THURINGIENSIS, ACEPHATE, BENDIOCARB, METHAMIDOPHOS, DIFLUBENZURON, LARVAL MORTALITY

Record -821

FIELD EFFICACY OF SEVERAL SELECTED INSECTICIDES AGAINST THE DIAMOND BACK MOTH PLUTELLA XYLOSTELLA ON CABBAGE BRASSICA OLERACEA-VAR-CAPITATA IN THE LOWLAND OF MALAYSIA

MOHAMAD R B; IBRAHIM Y B; CHEONG C W

PERTANIKA 2 (2). 1979. 84-88.

Full Journal Title: Pertanika

Language: ENGLISH

ABSTRACT

Efficacy of several selected insecticides were tested against the diamondback moth, *P. xylostella* (L), on cabbage, *B. oleracea* var. *capitata* (L), in the lowland (University of Agriculture Malaysia farm). Results showed that acephate, methamidophos and bendiocarb all at 0.1% a.i. [active ingredient], *Bacillus thuringiensis* at 1 g/l, diflubenzuron at 0.007% a.i., each in 450 l of water/ha caused significant reduction ($P < 0.05$) in larval population. These insecticides also provided equal protection against larval damage on young hearting cabbage leaves. The control plots consistently gave significantly lower yield ($P < 0.05$) of marketable heads as compared to the insecticide treated plots.

Descriptors/Keywords: BACILLUS-THURINGIENSIS, ACEPHATE, METHAMIDOPHOS, BENDIOCARB, DIFLUBENZURON, LARVAL POPULATION

Record - 822

EVALUATION OF NEW INSECTICIDES FOR THE CONTROL OF CABBAGE PESTS

MOHAN N J

PESTICIDES (BOMBAY) 21 (1). 1987. 49-54.

Full Journal Title: PESTICIDES (Bombay)

Language: ENGLISH

Descriptors/Keywords: MYZUS-PERSICAE, LIPAPHIS-ERYSIMI, PLUTELLA-XYLOSTELLA, CROCIDOLOMIA-BINOTALIS, QUINALPHOS, FENVALERATE, PERMETHRIN, PROFENOFOS, DIFLUBENZURON, BROMOPHOS, CYPERMETHRIN, DECAMETHRIN, CYFLOXYLATE, MIPCIN, INSECT GROWTH REGULATOR, AGRICULTURE, INDIA

Record -823

COMPARATIVE TOXICITY OF PESTICIDES AGAINST HOUSE FLY MUSCA DOMESTICA AND PREDATOR MITE MACROCHELES MUSCAEDOMESTICAE UNDER LABORATORY CONDITIONS

MOHSEN Z H; MAHMOOD S H; AL-DULAIMI S I; AL-FAISAL A-H M

J BIOL SCI RES 17 (3). 1986. 207-215.

Full Journal Title: Journal of Biological Sciences Research

Language: ENGLISH

ABSTRACT

Nine pesticides and formulations (iodofenophos, temephos, primiphos-methyl, permethrin, pounce, cymbush, arrivo, diflubenzuron and methoprene) were tested for their toxicity against mixed populations of the 3rd instar larva of house fly *Musca domestica* L. and adult female predator mite *Macrocheles muscaedomesticae* (Scopoli). Twenty four hr post-treatment, temephos, diflubenzuron and methoprene were selective in toxicity against fly larvae but were nonharmful against predator mite. The other pesticides and formulations were nonselective against both organisms.

Descriptors/Keywords: IODOFENPHOS, TEMEPHOS, PRIMIPHOS-METHYL PERMETHRIN, POUNCE, CYMBUSH, ARRIVO, DIFLUBENZURON, METHOPRENE, INSECTICIDES

Record -824

BIOLOGICAL ACTIVITY OF THE INSECT GROWTH REGULATOR DIFLUBENZURON ON LARVAE OF CULEX QUINQUEFASCIATUS

MOHSEN Z H; ZAHID Z R; AL-HALABI B; MEHDI N S

J BIOL SCI RES 17 (1). 1986. 279-288.

Full Journal Title: Journal of Biological Sciences Research

Language: ENGLISH

ABSTRACT

The biological activity of the IGR diflubenzuron was tested against *Culex quinquefasciatus* Say under laboratory conditions. Third instar larvae were exposed for 24-h to 5 concentrations of diflubenzuron : 0.0001, 0.0005, 0.001, 0.01 and 0.1 ppm. Results showed that mortalities of larvae and larval-pupal intermediates occurred at all concentrations reaching 90-100% at 0.01 and 0.1 ppm 4-8 days post-treatment. Pupation was evident at all concentrations except at 0.1 ppm. Adult emergence occurred only in the control and at the 2 lower concentrations 0.0001 and 0.0005 ppm. Results of histological examinations revealed that diflubenzuron-treated larvae at 0.1 ppm had substantial distortion in their cuticle. Transverse sections stained with Mallory's triple stain showed that cuticle was greatly reduced in thickness and not properly attached to the epidermis.

Descriptors/Keywords: MORTALITY, EMERGENCE, CUTICLE DISTORTION, HISTOLOGY

Record -825

FIELD EVALUATION OF SIMULIUM LARVICIDES EFFECTS ON TARGET AND NONTARGET INSECTS

MOHSEN Z H; MULLA M S

ENVIRON ENTOMOL 11 (2). 1982. 390-398.

Full Journal Title: Environmental Entomology

Language: ENGLISH

ABSTRACT

The effectiveness of 3 blackfly larvicides, FMC-45497 (10% EC [emulsifiable concentrate]) [(-)-cyano)-3-3 phenoxybenzyl-(+.) cis-3-(2,2-dichlorovinyl)-2,2-dimethyl cyclopropane-1-carboxylate], Abate (50% EC) [O,O,O',O'-tetramethyl-O-O',thiodi-p-phenylene phosphorothioate] and the insect growth regulator (IGR) Dimilin (25% WP [wetable powder] [1-(4-chlorophenyl)-3-(2,4-difluorobenzyl) urea], was studied in the field against target Simulium; their impact on selected aquatic nontarget insects was determined. Effectiveness and impact were assessed by 3 sampling techniques: drift net, Surber sampler and polyethylene strips. Interval drift samples gave rapid evaluation of the effectiveness of the fast-acting larvicides FMC-45497 and Abate. For Dimilin, which is slow-acting, Surber sampler and polyethylene strips were more suitable because drift among aquatic organisms was not induced when Dimilin was applied at 0.1 ppm/15 min. After the application of FMC-45497 at the rate of 0.01 ppm/15 min, catastrophic drift was noted in some components of the aquatic fauna, Baetis, Chironomidae, Hydropsyche and Odonata. Baetis naiads constituted over 85% of the drifting organisms in number. Abate applied at 0.1 ppm/15 min was selective, producing drift in Simulium larvae only; Dimilin at 0.1 ppm/15 min caused moderate decline in Simulium larvae, Baetis and Hydropsyche.

Descriptors/Keywords: BAETIS, HYDROPSYCHE, ODONATA, CHIRONOMIDAE, CATASTROPHIC DRIFT, FMC-45497, ABATE, DIMILIN, INSECT GROWTH REGULATOR, DRIFT NET, SURBER SAMPLER, POLY ETHYLENE STRIP

Record - 826

MOKROUSOVA, E. P. AND G. E. ARKHIPOV. 1986. DIMILIN FOR THE CONTROL OF PESTS OF CRUCIFEROUS PLANTS. ZASHCHITA RASTENII (5): 28-29.

Record - 827

MOKROUSOVA, E. P. AND A. P. SAZONOV. 1980. EVALUATION OF THE EFFECT OF DIMILIN ON THE NATURAL POPULATION OF LOXOSTEGE STRICTICALIS (INHIBITION OF CHITIN SYNTHESIS). BIULLETIN' - VSESOIUZNYI NAUCHNO-ISSLEDOVATEL'SKII INSTITUT ZASHCHITY RASTENII. 50: 30-35. LENINGRAD. INSTITUT.

Record - 828

HOST PLANT EFFECTS ON DETOXICATION IN GYPSY MOTH LYMANTRIA DISPAR

MOLDENKE A F; BERRY R E; MILLER J C; WERNZ J G

75TH ANNUAL MEETING OF THE ECOLOGICAL SOCIETY OF AMERICA ON PERSPECTIVES IN ECOLOGY: PAST, PRESENT, AND FUTURE, SNOWBIRD, UTAH, USA, JULY 29-AUGUST 2, 1990. BULL ECOL SOC AM 71 (2 SUPPL.). 1990. 259.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: ABSTRACT, WHITE ALDER, DOUGLAS-FIR, ACEPHATE, ALDRIN, EPOXIDASE, CYTOCHROME, P-450, DIFLUBENZURON PUPATION

Record - 829

MONACO, R. AND O. TRIGGLIANI. 1977. EFFECTIVENESS OF BACILLUS THURINGIENSIS (BERL.), THURICIDE HP, AND DIMILIN ON PRAYS OLEAE (BERN.) LEPIDOPTERA, HYPONOMEUTIDAE. INF. FITOPATOL. 27(4): 9-11.

Record - 830

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Record - 831

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Record - 832

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Record - 833

MOORE, R. B. AND T. O'CONNOR. 1975. THE ENVIRONMENTAL IMPACT OF DIMILIN (TH-6040) ON A FOREST AND AQUATIC ECOSYSTEM: THE EFFECTS OF DIMILIN ON SMALL MAMMALS: COOPERATIVE AGREEMENT NO., 42-178, PRELIM. PROGRESS REPORT, JAN 1975 THROUGH SEPT. 1975. UNPUBLISHED STUDY RECEIVED JAN. 12, 1976 UNDER 148-1170; SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 834

BOLL WEEVILS MECHANISM OF TRANSFER OF DIFLUBENZURON FROM MALE TO FEMALE

MOORE R F; LEOPOLD R A; TAFT H M

J ECON ENTOMOL 71 (4). 1978 587-590.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Data show that it is unlikely that copulation is the mechanism by which diflubenzuron is transferred from male to female boll weevils *Anthonomus grandis* Boheman. Males treated by feeding on diets containing diflubenzuron were unable to transfer sufficient amounts of it to affect the hatch of eggs from untreated females. Studies with 14-C-labeled diflubenzuron showed that 3-10% of diflubenzuron applied externally was transferred between the sexes, but the testes of treated males contained insufficient diflubenzuron to affect hatch if the material were transferred to females. Diflubenzuron is apparently transferred between the sexes by physical contact; transfer by copulation is improbable.

Descriptors/Keywords: ANTHONOMUS-GRANDIS, DIETS, PHYSICAL CONTACT, COPULATION

Record - 835

MORI, P. AND G. VIANELLO. 1979. INTEGRATED CONTROL OF CARPOCAPSA POMONELLA L. WITH DIFLUBENZURON (TEST RESULTS) IN APPLE AND PEAR ORCHARDS IN THE VENETO AREA, ITALY. PROC. INT'L SYMP. DER IOBC/WPRS UBER INTEGRIERTEN PFLANZENSCHUTZ IN DER LAND- UND FORSTWIRTSCHAFT. PP. 455-457.

Record - 836

MORI, P. AND G. VIANELLO. 1979. SYSTEMATIC CONTROL EXPERIENCES TOWARDS THE CODLING MOTH CARPOCAPSA POMONELLA L. WITH DIFLUBENZURON (APPLE AND PEAR PROTECTION). PROC. INT'L SYMP. DER IOBC/WPRS UBER INTEGRIERTEN PFLANZENSCHUTZ IN DER LAND- UND FORSTWIRTSCHAFT. PP. 458-460..

Record - 837

MORRISON, W. G. AND A. D. COURTNEY. 1981. A BRIEF REVIEW OF HERBICIDE EFFICACY, ASSESS DURING A TWO YEAR EXPERIMENTAL PROGRAMME IN MINOR WATER COURSES IN N. IRELAND. PROCEEDINGS AQUATIC WEEDS AND THEIR CONTROL. PP. 131-139.

Record - 838

EFFECT OF METHOPRENE AND DIFLUBENZURON ON LARVAL DEVELOPMENT OF THE CAT FLEA SIPHONAPTERA PULICIDAE

MOSER B A; KOEHLER P G; PATTERSON R S

J ECON ENTOMOL 85 (1). 1992. 112-116.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Cat flea larvae, *Ctenocephalides felis* Bouche, exposed to glass surfaces treated with methoprene concentrations from 0.127 to 1,270 ng/cm² did not emerge as adults. Most larvae died in the third instar, but those exposed to the 0.127 ng/cm² concentration formed larval-pupal intermediates. Larvae exposed to glass surfaces treated with diflubenzuron concentrations from 12.7 to 1,270 ng/cm² died during the process of molting in all three instars. Exposure of larvae to 12.7 ng/cm² diflubenzuron resulted in 15 and 5.2% adult emergence, respectively.

Descriptors/Keywords: CTENOCEPHALIDES-FELIS, INSECT JUVENILE HORMONE ANALOG, CHITIN SYNTHESIS INHIBITOR, INSECTICIDE, BIOLOGICAL CONTROL

Record - 839

MOULINIER, C. 1982. STUDY OF THE ACTION OF TWO DIFLUBENZURON FORMULATIONS ON THE DEVELOPMENT AND GROWTH OF CRASSOSTREA GIGAS LARVAE. REPORT LABORATORY OF MEDICAL PARASITOLOGY AND MYCOLOGY, BORDEAUX, FRANCE DE-3212.

Record - 840

MOURET, J. 1983. DEMOGRAPHIC EFFECTS OF DIFLUBENZURON ON TSETSE FLIES GLOSSINA PALPALIS GAMBIENSIS. CAHIERS O.R.S.T.O.M. SERIE ENTOMOLOGIE MEDICALE ET PARASITOLOGIE 21 (1):19-27.

Record - 841

EFFECT OF CHLORPYRIFOS DIFLUBENZURON AND GAMMA IRRADIATION ON THE
RELATIVE SUSCEPTIBILITY OF SPODOPTERA LITTORALIS LARVAE TO SOME
INSECTICIDES

MOUSTAFA O K; ABDEL-SALAM K A

BOLL ZOOL AGRAR BACHIC 23 (2). 1991. 123-132.

Full Journal Title: Bollettino di Zoologia Agraria e di Bachicoltura

Language: ENGLISH

ABSTRACT

Laboratory studies were carried out to evaluate whether irradiation of pupae resulting from larvae reared on untreated or Empire treated diet, could alter the susceptibility of F1 fourth instar larvae of *S. littoralis* to some insecticides. Substerilizing doses (25, 50 and 100 Gy) of gamma radiation were used for pupal irradiation. The results revealed that: (1) pupal irradiation alone or preceded by chlorpyrifos/diflubenzuron (Empire) treatment had the same effect, both equally decreased the tolerance of F1 larvae to deltamethrin (Decis) and cyanophos (Cyanox), but treatment with Empire alone didn't affect the response of these larvae; (2) no differences in the level of susceptibility of F1 larvae to methomyl/diflubenzuron (Deenate) or chlorpyrifos/Dowco 439 (Delfos) was observed whether Empire and irradiation with lower doses were applied in a combination or alone; (3) the susceptibility of F1 larvae to Empire wasn't affected as a result of separate treatments with Empire or irradiation, while insecticide-irradiation combination greatly enhanced its effectiveness; and (4), the effect of irradiation alone was more pronounced in increasing the toxicity of chlorpyrifos (Dursban); cyfluthrin (Baythroid) and thiodicarb (Larvin), but when combined with Empire, different levels of tolerance to those insecticides were noticed. Thus, gamma irradiation when applied alone has increased the susceptibility of *S. littoralis* F1 larvae to all tested insecticides, except Empire. Furthermore, F1 larvae from two irradiated parents had some relative susceptibility to the tested insecticides, the degree was probably great enough to achieve more favorable integrated control by the application of any one of these insecticides in the field, being treated by the release of sterile moths of the cotton leaf worm, *S. littoralis*.

Descriptors/Keywords: COTTON PEST, INTEGRATED PEST MANAGEMENT

Record - 842

INFLUENCE OF DIFLUBENZURON ON THE TOXICITY AND RESIDUAL ACTIVITY OF
CHLORPYRIFOS

MOUSTAFA O K; EL-SAYED M M

BULL ENTOMOL SOC EGYPT ECON SER 0 (13). 1982-1983 (1985). 203-208.

Full Journal Title: Bulletin of the Entomological Society of Egypt Economic Series

Language: ENGLISH

ABSTRACT

The present study was conducted to evaluate the efficiency and residual activity of diflubenzuron in combination with chlorpyrifos against the fourth instar larvae of *Spodoptera littoralis*. The results reveal that diflubenzuron has a role in increasing the toxicity of chlorpyrifos associated with decreasing the percentage of pupation. Feeding of larvae on treated leaves with DC 702 FL for 4-days intervals of spraying resulted in 2% malformed pupae after 28 days.

Descriptors/Keywords: SPODOPTERA-LITTORALIS, MALFORMATION, PUPATION, REDUCTION

Record - 843

INSECTICIDE TREATMENTS FOR THE CONTROL OF SMALL ERMINE MOTH
YPONOMEUTA PADELLA L. IN HAWTHORN HEDGES

MOWAT D J; CLAWSON S

AGRIC ECOSYST ENVIRON 21 (3-4). 1988. 245-254.

Full Journal Title: Agriculture Ecosystems & Environment

Language: ENGLISH

ABSTRACT

Several insecticides, when applied to a hawthorn hedge by hydraulic sprayer at approximately 85 ml m⁻² to control feeding larvae of small ermine moth, compared favourably with the only currently approved insecticide (trichlorfon), and some may be preferable for environmental reasons. The control provided by diflubenzuron (0.005%) and some pyrethroids (0.001%), which are arthropod-specific or nearly so, was so high as to suggest that further reduction in spray concentration or volume is possible. *Bacillus thuringiensis*, whose effect is confined to the larvae of Lepidoptera and some Diptera, and dimethoate, which gave a rapid and curtailed kill, also performed comparably with trichlorfon. When applied in a Potter's Tower, DNOC, trichlorfon and fenitrothion killed larvae within their dormant-season covering, but fine-droplet hydraulic spraying in February was unsuccessful, apparently because of inadequate target coverage.

Descriptors/Keywords: CRATAEGUS-MONOGYNA, BACILLUS-THURINGIENSIS, INTEGRATED CONTROL, DIFLUBENZURON, PYRETHROID, DIMETHOATE, TRICHLORFON, FENITROTHION, CROP INDUSTRY PESTS

Record - 844

MULLA, M. S. AND H. A. DARWAZEH. 1979. NEW INSECT GROWTH REGULATORS AGAINST FLOOD AND STAGNANT WATER MOSQUITOES, EFFECTS ON NON-TARGET ORGANISMS. MOSQUITO NEWS 39(4):746-755.

Record - 845

MULLA, M. S. AND H. A. DARWAZEH. 1975. THE IGR DIMILIN AND ITS FORMULATIONS AGAINST MOSQUITOES. J. ECON. ENTOMOL. 69(3): 309-312.

Record - 846

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Record - 847

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Record - 848

MULLA, M. S. 1973. EFFECT OF TH-6040 ON MOSQUITO (GAMBUSIA) FISH. REPORT THOMPSON-HAYWARD CHEMICAL COMPANY.

Record - 849

MULLA, M. S. 1973. TWO FIELD POND STUDIES WITH DIMILIN FOR CONTROL OF CULEX TARSALIS. REPORT THOMPSON-HAYWARD CHEMICAL CO.

Record - 850

MULLA, M. S. 1973. EVALUATION OF TH-6040 FOR THE CONTROL OF MIDGES AND MOSQUITOES. THOMPSON-HAYWARD CHEMICAL COMPANY.

Record - 851

MULLA, M. S. 1973. TWO FIELD POND STUDIES FOR CONTROL OF CULES TARSALIS. REPORT THOMPSON-HAYWARD CHEMICAL COMPANY.

Record - 852

MULLA, M. S. 1973. DIMILIN ADDED TO FISH PONDS AND APPLIED TO POULTRY FOR CONTROL OF CHIRONOMID MIDGES, FLIES IN MANURE AND EYE GNATS. REPORT THOMPSON-HAYWARD CHEMICAL COMPANY.

Record - 853

MURPHEY, F., R. LAKE, AND G. WHITMYRE. 1974. FIELD EVALUATION OF TH-6040 MOSQUITO GROWTH REGULATOR AT THE PETERFIELD MARSH TEST SITE, SUSSEX CO. DELEWARE, AUGUST 1974. UNPUBLISHED STUDY RECIEVED FEB. 7, 1977 UNDER UNKNOWN ADMIN. NO., SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 854

MURTHY, R. L. N. 1979. PHYSIOLOGICAL AND CONTACT ACTIVIITY OF DIFLUBENZURON AGAINST SPODOPTERA LITURA (PEST OF TEA). PESTICIDES 13(12): 33.

Record - 855

RESIDUES OF DIFLUBENZURON AND TWO OF ITS METABOLITES IN A FOREST ECOSYSTEM AFTER CONTROL OF THE PINE LOOPER MOTH BUPALUS PINIARIUS L
MUTANEN R M; SILTANEN H T; KUUKKA V P; ANNILA E A; VARAMA M M O
PESTIC SCI 23 (2). 1988. 131-140.

Full Journal Title: Pesticide Science

Language: ENGLISH

ABSTRACT

Diflubenzuron, 1-(4-chlorophenyl)-3-(2,6-difluorobenzoyl)urea was used to control the pine looper population in about 1160 ha of Scots pine stand in eastern Finland in summer 1984. The control measure was effective, resulting in the collapse of the population in the treated area. Residues of diflubenzuron and two of its metabolites, 4-chloroaniline and 4-chlorophenylurea, were determined in water, pine needles, litter, humus, boleti and other wild mushrooms, bilberry (*Vaccinium myrtillus* L.) and cowberry (*Vaccinium vitis-idaea* L.) samples taken from this area. In water samples taken from the treated area diflubenzuron was still detected at concentrations of 0.1 .mu.g litre-1 2 months after application. No diflubenzuron was detected in this area the following year, nor outside the treated area. Neither metabolite was detected at any time. The sum of diflubenzuron and its metabolites in the litter layer was, on average, 0.7 mg kg-1 both 1 week and 1 month after the application. The next year, however, it had increased to 1.4 mg kg-1. Diflubenzuron and its metabolites were not detected in the humus layer. The amount of diflubenzuron residues in the pine needles was, on average, 3.0 mg kg-1 1 day after the application, but in 2 months the level had decreased to 0.2-0.3 mg kg-1 or was not detectable. The following year the sum of diflubenzuron and its metabolites in two pine-needle samples was 0.3 and 1.6 mg kg-1. The sum of diflubenzuron and its metabolites in wild mushrooms was, on average, 0.07 kg kg-1 1 week after the application, but the following year no residues were detected. No residues were found in the boletus samples. The residues of diflubenzuron and its two metabolites in bilberries totalled, on average, 0.2 mg kg-1 day after the applicaiton, and 6 .mu.g kg-1 the following year. The sum of diflubenzuron and metabolites in cowberries was, on average, 0.2 mg kg-1 1 month after application.

Descriptors/Keywords: VACCINIUM-VITIS-IDAEA, PINUS-SYLVESTRIS, VACCINIUM-MYRTILLUS, 4 CHLOROANILINE, 4 CHLOROPHENYLUREA, ENVIRONMENTAL POLLUTANT KINETICS, PESTS INSECTICIDE

Record - 856

CHITIN SYNTHESIS INHIBITORS EFFECTS ON INSECTS AND ON NONTARGET ORGANISMS

MUZZARELLI R

CRIT REV ENVIRON CONTROL 16 (2). 1986. 141-146.

Full Journal Title: Critical Reviews in Environmental Control

Language: ENGLISH

Descriptors/Keywords: REVIEW, EPHEMEROPTERA, PLECOPTERA, DIPTERA, TRICOPTERA, COLEOPTERA, OLIGOCHAETA, GASTROPODA, LIVESTOCK, BIRD, DIFLUBENZURON, MORTALITY

Record - 857

NADASY, M. 1978. DIMILIN AS A PERSPECTIVE ENVIRONMENT PROTECTIVE INSECTICIDE. PROC. 18TH HUNG. ANN. MEET. BIOCHEM. PP. 125-126.

Record - 858

INHIBITION OF N ACETYLGLUCOSAMINE INCORPORATION INTO THE CULTURED INTEGUMENT OF CHILO SUPPRESSALIS BY DIFLUBENZURON

NAKAGAWA Y; MATSUTANI M; KURIHARA N; NISHIMURA K; FUJITA T

PESTIC BIOCHEM PHYSIOL 42 (3). 1992. 242-247.

Full Journal Title: Pesticide Biochemistry and Physiology

Language: ENGLISH

ABSTRACT

Incubation first with the molting hormone 20-hydroxyecdysone before culture of pieces of the integument of rice stem borer larvae increased the incorporation of N-acetyl-[14C]glucosamine ([14C]GluNAc) into the tissue. The [14C]GluNAc incorporation was polymerized to form chitin, because the radioactivity was mostly freed by treatment with chitinase, but not by an alkaline treatment. From integument pieces first treated with hormone and then with diflubenzuron or polyoxin D, much incorporated GluNAc was solubilized (much radioactivity was freed) by an alkaline treatment, as from tissues not treated with hormone. The potency inhibiting the incorporation of [14C]GluNAc into the cultured integument was expected to be a physiological parameter for the structure-activity study of benzoylphenylurea larvicides.

Descriptors/Keywords: RICE STEM BORER, CUTICLE FORMATION INHIBITION, INSECT GROWTH REGULATOR, MODE OF ACTION, BENZOYLPHENYLUREA, LARVICIDE, CARBON-14 LABELLING

Record - 859

HISTOCHEMICAL LOCALIZATION OF PROTEINS AND ALKALINE PHOSPHATASE IN DIFLUBENZURON TREATED INSECTS

NAQVIS N H; SHAFIS; ZIA N

PAK J SCI IND RES 32 (3). 1989. 190-193.

Full Journal Title: Pakistan Journal of Scientific and Industrial Research

Language: ENGLISH

ABSTRACT

The proteins and alkaline phosphates were localized histochemically through electrophoresis, in diflubenzuron (DFB) treated *Musca domestica* (L.) (PCSIR strain) larvae and *Blattella germanica* (L.) (Karachi University strain) nymphs, respectively. In *M. domestica* DFB at 0.03125% inhibited proteins to some extent while at a higher dose (0.5%) the inhibition was negligible. The alkaline phosphatase was inhibited by DFB with little variation in the two doses. In *B. germanica* at 0.03125% dose DFB was more active than at 0.0625%, and inhibited a number of protein bands and showed a regular inhibition of enzymes with the increase in dose.

Descriptors/Keywords: MUSCA-DOMESTICA, BLATTELLA-GERMANICA, ENVIRONMENTAL POLLUTION, ENVIRONMENTAL PROTECTION, POLLUTION CONTROL, STERILIZATION, NEOPESTICIDE

Record - 860

EVALUATION OF FIVE INSECT GROWTH REGULATORS ON THE EGG PARASITOID *TRICHOGRAMMA CHILONIS* ISHII HYM. TRICHOGRAMMATIDAE AND THE HATCHABILITY OF *CORCYRA CEPHALONICA* STAINT LEP. GALLERIIDAE

NARAYANA M L; BABU T R

J APPL ENTOMOL 113 (1). 1992. 56-60.

Full Journal Title: Journal of Applied Entomology

Language: ENGLISH

ABSTRACT

The five antimoulting compounds viz., diflubenzuron, buprofezin, triflumuron, flucycloxuron and HOE 607 were evaluated for their effects on *Trichogramma chilonis*, an important egg parasitoid of castor semilooper, *Achoea janata* L. The development of the immature stages of *T. chilonis* was drastically affected when exposed to growth regulators at 4 days after parasitisation and the effects were more pronounced with triflumuron and HOE 607. Exposure at 7th day after parasitisation had very little effect on the emergence of adults, but decreased significantly the fecundity of emerged adults. Triflumuron and HOE 607 also exerted pronounced adverse effects on the hatchability of *Corcyra cephalonica*.

Descriptors/Keywords: HYMENOPTERA, LEPIDOPTERA, NON-TARGET ORGANISM, ADULT EMERGENCE, BIOLOGICAL CONTROL, DIFLUBENZURON, BUPROFEZIN, TRIFLUMURON, FLUCYCLOXURON, HOE-607, FECUNDITY, HATCHABILITY

Record - 861

EFFICACY OF MOLT INHIBITORS ON COTTON PESTS UNDER FIELD CONDITIONS

NATARAJAN N; KUMARASWAMI T; BALASUBRAMANIAN M

REGUPATHY, A. AND S. JAYARAJ (ED.). BEHAVIOURAL AND PHYSIOLOGICAL APPROACHES IN PEST MANAGEMENT; MEETING, COIMBATORE, MADRAS, INDIA, JUNE 21-23, 1984. XVIV++218P. TAMIL NADU AGRICULTURAL UNIVERSITY: COIMBATORE, MADRAS, INDIA. ILLUS. PAPER. 0 (0). 1985. 167-170.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: LEAFHOPPER, ASH, WEEVIL, SPOTTED, BOLLWORM, PINK BOLLWORM, APHID, DIFLUBENZURON, 2 CHLORO-N-4-TRIFLUOMETHOXYPHENYLAMINOCARBONYLBENZAMIDE, INSECTICIDE, INSECT GROWTH REGULATOR, TAMIL-NADU INDIA

Record - 862

NATESAN, R. AND M. BALASUBRAMANIAN. 1981. OVICIDAL ACTIVITY OF DIFLUBENZURON ON TOBACCO CATERPILLAR, SPODOPTERA LITURA (FAB.) (LEPIDOPTERA: NOCTUIDAE). J. OF ENTOMO. RESEARCH 5 (2):138-142.

Record - 863

EFFECT OF DIFLUBENZURON ON PUPAE OF TOBACCO CATERPILLAR SPODOPTERA LITURA

NATESAN R; BALASUBRAMANIAN M

ENTOMON 5 (3). 1980. 211-214.

Full Journal Title: Entomon

Language: ENGLISH

ABSTRACT

Experiments were conducted to test the effect of diflubenzuron (1-(4-chlorophenyl)-3-(2,6-difluorobenzoyl) urea) on pupae of tobacco caterpillar, *S. litura* F. Dipping of pupae in diflubenzuron solution for 10 s, caused pupal mortality, partial emergence and malformed adults. Susceptibility of pupae decreased with increase in their age.

Descriptors/Keywords: 1-4 CHLOROPHENYL-3-2 6-DIFLUOROBENZOYL UREA, DIPPING, MORTALITY, MALFORMATION, AGE

Record - 864

INFLUENCE UPON HONEYBEES OF CHRONIC EXPOSURE TO VERY LOW LEVELS OF SELECTED INSECTICIDES IN THEIR DIET

NATION J L; ROBINSON F A; YU S J; BOLTEN A B

J APIC RES 25 (3). 1986. 170-177.

Full Journal Title: Journal of Apicultural Research

Language: ENGLISH

ABSTRACT

Several sizes of hive were treated for colony viability and ease of manipulation when colonies of honeybees were confined within screened cages. Hives containing either a single standard frame (1742 cm²) or a single miniature frame (431 cm²) were acceptable, but hives containing a single standard frame were used in our experiments because they were easier to manipulate and produced more brood that could be used for other experimental purposes. A small colony was established in each of several 1.8 .times. 1.8 .times. 2.0-m screened cages. Pollen cakes containing 0.017 ppm permethrin, 0.16 ppm malathion, 5.12 ppm methoxychlor, 10 ppm diflubenzuron, 0.17 ppm carbaryl or no pesticide were fed to the colonies to determine the effects on the bees of chronic exposure. During a test period of 10 weeks only methoxychlor caused a significant reduction ($P < 0.05$) in quantity of brood reared, amount of pollen cake consumed, and amount of sucrose syrup stored in the colonies. Diflubenzuron at 10 ppm caused greater than 50% reduction in the amount of syrup stored compared to control colonies, but it did not cause reduction in consumption of pollen or in the quantity of brood reared. In general, colonies fed insecticides accumulated debris and dead bees on the hive bottom because of reduced house-cleaning. Colonies fed methoxychlor or malathion were particularly susceptible to invasion by wax moth.

Descriptors/Keywords: WAX MOTH, SUSCEPTIBILITY, POLLEN CAKE, PERMETHRIN, MALATHION, METHOXYCHLOR, DIFLUBENZURON, CARBARYL, SUCROSE SYRUP, STORAGE

Record - 865

NATIONAL COALITION AGAINST THE MISUSE OF PESTICIDES. 1988. DIFLUBENZURON (DIMILIN) INFORMATION PACKET: AN ASSESSMENT OF HAZARDS AND ALTERNATIVES IN GYPSY MOTH CONTROL PROGRAMS. THE NATIONAL COALITION AGAINST THE MISUSE OF PESTICIDES.

Record - 866

SOIL MULCH AND FOLIAR SPRAYS AS A PROGRAMME FOR CONTROL OF FRANKLINIELLA OCCIDENTALIS ON CUCUMBER

NAWROCKA B

JOINT EUROPEAN PLANT PROTECTION ORGANIZATION/INTERNATIONAL ORGANIZATION FOR BIOLOGICAL CONTROL-EUROPEAN PLANT SOCIETY CONFERENCE ON PLANT PROTECTION IN GLASSHOUSES, NARAMOWICE, POLAND, JUNE 4-7, 1991. BULL OEPP (ORGAN EUR MEDITERR PROT PLANT) 22 (3). 1992. 383-385.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: TEFLUBENZURON, DIFLUBENZURON, INSECTICIDES, TOLERABLE POPULATION LEVEL, PROGRAM

Record - 867

ACUTE AND CHRONIC EFFECTS OF DIFLUBENZURON DIMILIN IN FRESH WATER FISH AND INVERTEBRATES

NEBEKER A V; MCKINNEY P; CAIRNS M A

ENVIRON TOXICOL CHEM 2 (3). 1983. 329-336.

Full Journal Title: Environmental Toxicology and Chemistry

Language: ENGLISH

ABSTRACT

Two fish and 7 invertebrate freshwater spp. [*Pimephales promelas*, *Poecilia reticulata*, *Daphnia magna*, *Hyalella Azteca*, *Juga plicifera*, *Physa*-spp., *Clistoronia magnifica*, *Tanytarsus dissimilis*, *Cricotopus* spp.] were exposed to diflubenzuron (Dimilin) in acute and chronic laboratory tests. No effects on newly hatched and juvenile fathead minnows juvenile guppies were seen at .ltoreq. 36 .mu.g/l, the highest concentration tested. An early life stage test (30 days) with fathead minnows showed no effect .ltoreq. 36 .mu.g/l. No effects on survival, growth or reproduction were observed with 2 snail spp., *J. plicifera* and *P. spp.*, at .ltoreq. 36 .mu.g/l. Adult emergence of the caddis fly *C. magnifica* was inhibited at 0.1 .mu.g/l. *D. magna* were killed at 2.0 .mu.g/l. *H. azteca* mortality was significant at 2.0 .mu.g/l. Molting and survival of the midge *T. dissimilis* were affected at 4.9 .mu.g/l. Molting and survival of the midge *C. spp.* were affected at 4.9 .mu.g/l and adult emergence did not occur at 1.6 .mu.g/l.

Descriptors/Keywords: PIMEPHALES-PROMELAS, POECILIA-RETICULATA, DAPHNIA-MAGNA, HYALELLA-AZTECA, JUGA-PLICIFERA, PHYSA-SPP, CLISTORONIA-MAGNIFICA, TANYTARSUS-DISSIMILIS, CRICOTOPUS-SPP, INSECTICIDE, MORTALITY, MOLTING

Record - 868

NEISESS, J., G. P MARKIN. R. SCHAEFER. 1976 FIELD EVALUATIONS OF ACEPHATE AND DIMILIN [1-(4-CHLOROPHENYL)-3-(2,6-DIFLUOROBENZOYL) UREA] AGAINST THE DOUGLAS-FIR TUSSOCK MOTH ORGYIA PSEUDOTSUGATA. J. ECON. ENTOMOL. 69 (6): 783-786.

Record - 869

LABORATORY EVALUATION OF TOLERANCE OF DUGESIA DOROTOCEPHALA TO DIFFERENT DOSAGES OF DIFLUBENZURON

NELSON F R S

MOSQ NEWS 41 (4). 1981. 784-785.

Full Journal Title: Mosquito News

Language: ENGLISH

Descriptors/Keywords: CULEX-QUINQUEFASCIATUS, CULEX-PEUS, CULEX-TARSALIS

Record - 870

NEUES, A. M. AND R. BEYER. 1982. EFFECTS OF DIFLUBENZURON (DIMILIN) ON THE LARVAE, IMAGINES AND EGGS OF EPILACHNA VARIEVESTIS (MULS.) WHEN APPLIES TO THE HOST PLANT. (MEXICAN BEAN BEETLE, BUSH BEAN AND SOYBEAN PEST). BEITRAGE ZUR TROPISCHEN LANDWIRTSCHAFT UND VETERINARMEDIZIN. 20(4): 457-465.

Record - 871

BIOCHEMICAL AND TOXICOLOGICAL DIFFERENCES IN THE MODES OF ACTION OF THE BENZOYLUREAS

NEUMANN R; GUYER W

PESTIC SCI 20 (2). 1987. 147-156.

Full Journal Title: Pesticide Science

Language: ENGLISH

ABSTRACT

The two insecticidal benzoylurea compounds, diflubenzuron and chlorfluazuron, show large differences in their toxicity against the larvae of insects like the tobacco budworm, *Heliothis virescens*, or the Egyptian cotton leafworm, *Spodoptera littoralis*, chlorfluazuron being about 100 times more toxic. This difference is due mainly to a much faster metabolism of diflubenzuron. Its half-life within the larvae is about 5 h, compared to about 50 h for chlorfluazuron. Chlorfluazuron is also the much better ovicide of the two, following injection of the compounds into the females of *H. virescens*. Again the difference in the rate of metabolism is the main cause. The rate of excretion of the parent benzoylureas is relatively low, but their metabolites are excreted very quickly.

Descriptors/Keywords: HELIOTHIS-VIRESCENS, SPODOPTERA-LITTORALIS, DIFLUBENZURON, CHLORFLUAZURON, INSECTICIDE, PESTS, AGRICULTURE

Record - 872

USE OF OIL-SURFACTANT MIXTURES AS ADJUVANTS TO DIFLUBENZURON

NEUMANN G L; STERK G; PATERNOTTE E

SCHERING N.V., J. E. MOMMAERTSLAAN 14, 1920 MACHELEN DIEGEM , BELGIUM.

INTERNATIONAL SYMPOSIUM ON CROP PROTECTION, PART B. MEDED FAC

LANDBOUWWET RIJSUNIV GENT 52 (2 PART B). 1987. 471-476.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: INSECTICIDE EFFICACY, REDUCED DOSE

Record - 873

INSECT GROWTH REGULATORS NEW PROTECTANTS AGAINST THE ALMOND MOTH EPHESTIA CAUTELLA IN STORED INSHELL PEANUTS

NICKLE D A

J ECON ENTOMOL 72 (6). 1979. 816-819.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Four insect growth regulators (IGRs) were tested for efficacy in suppressing populations of *E. cautella* (Walker) in inshell peanuts. In laboratory tests, peanuts were sprayed with several concentrations of either hydroprene, methoprene, diflubenzuron or Stauffer MV-678 (1-(8-methoxy-4,8-dimethylnonyl)-4-(1-methylethyl)benzene) and infested with 200 eggs of almond

moths. Concentrations below 100 ppm of all IGRs except diflubenzuron (hydroprene, 5 ppm; methoprene, 25 ppm; MV-678, 90 ppm) completely suppressed adult emergence. These IGRs reduced fecundity at lower concentrations. MV-678 at approximately 30 ppm completely inhibited oviposition. Residues of hydroprene, methoprene and MV-678 were as effective as residues of malathion (35 ppm) against the almond moth after at least 8 mo. of storage.

Descriptors/Keywords: HYDROPRENE, METHOPRENE, DIFLUBENZURON, STAUFFER MV-678, 1-8 METHOXY-4 8-DIMETHYLNONYL-4-1-METHYLETHYL BENZENE, REDUCED FECUNDITY, OVIPOSITION INHIBITION, RESIDUE ANALYSIS

Record - 874

NIDOKEMUSZ, E. AND R. IMRE. 1980. EFFECT OF A 14 DAY FEEDING PERIOD OF DIMILIN 25WP ON REPRODUCING PHEASANTS PHASIANUS COLCHICUS L. PLANT PROTECTION 16(8): 443-448.

Record - 875

CHERRY CHOKE PRUNUS VIRGINIANA L. EASTERN TENT CATERPILLAR MALACOSOMA AMERICANUM F. CHOKE CHERRY EFFICACY OF SELECTED INSECTICIDES AGAINST EASTERN TENT CATERPILLAR WAYNE COUNTY OHIO USA 1989

NIELSEN D G; DUNLAP M J

THOMAS, J. H. (ED.). INSECTICIDE AND ACARICIDE TESTS, VOL. 16. 327P.

ENTOMOLOGICAL SOCIETY OF AMERICA: LANHAM, MARYLAND, USA. ILLUS. PAPER. 0

(0). 1991. 269-270.

Language: ENGLISH

Descriptors/Keywords: ICIA-321, TRITON B-1956, DIMILIN, SEVIN, RH-5992, SAFER SOAP, SUNSPRAY 6E

Record - 876

DIFLUBENZURON SURFACE RESIDUES IN FLORIDA USA CITRUS

NIGG H N; CANNIZZARO R D; STAMPER J H

BULL ENVIRON CONTAM TOXICOL 36 (6). 1986. 833-838.

Full Journal Title: Bulletin of Environmental Contamination and Toxicology

Language: ENGLISH

Descriptors/Keywords: ORANGE, DIMILIN, INSECT GROWTH REGULATOR, SOIL PERSISTENCE, LEAF FRUIT

Record - 877

BOLL WEEVILS SPERM TRANSFER BY STERILE VS NORMAL MALES FECUNDITY AND THE USE OF SPERM BY FEMALES

NILAKHE S S

ANN ENTOMOL SOC AM 70 (6). 1977 929-932.

Full Journal Title: Annals of the Entomological Society of America

Language: ENGLISH

ABSTRACT

Normal males of *Anthonomus grandis* Boheman (Coleoptera: Curculionidae), were held unmated and then were mated once. The number of sperm transferred increased as they grew older, but the percentage of the available sperm transferred decreased. The 4 day old males transferred approx. 1/5 as many sperm as the 14 day old males; but the fecundity of the females mated to these males was approximately the same. Males treated with gamma irradiation alone or in combination with

diflubenzuron [1-(4-chlorophenyl)-3-(2,6-difluorobenzoyl)-urea] and held unmated for 5 days transferred .apprx. 3/4 of available sperm in a single mating. Both 9 day old normal males and males treated with 8000 rad + diflubenzuron transferred .apprx. 1.5 million sperm to the females; the females mated to treated males had only .apprx. 1/2 as many sperm in their spermathecae as females mated to normal males. This is the 1st indication that irradiation lowers the quality of boll weevil sperm. Sperm from the spermathecae were utilized by the females at a much faster rate during the 1st 4 days after mating than during the 5th through the 10th day.

Descriptors/Keywords: ANTHONOMUS-GRANDIS, DIFLUBENZURON, GAMMA IRRADIATION

Record - 878

SPERM PRODUCTION IN OVER WINTERED VS STERILE BOLL WEEVILS AND
ATTRACTIVENESS OF LABORATORY VS OVER WINTERED MALES

NILAKHES S

J GA ENTOMOL SOC 12 (4). 1977 321-327.

Full Journal Title: Journal of the Georgia Entomological Society

Language: ENGLISH

ABSTRACT

Untreated males of *Anthonomus grandis* Boheman produced significantly greater numbers of sperm than males treated with different sterilizing procedures. Males given 0.09% busulfan (1,4-butanediol dimethanesulfonate) in adult diet produced 4.11 million sperm during their lifetime. Males treated with an acute dose of 8000 rad alone or in combination with 0.01% diflubenzuron, (N-[[[(4-chlorophenyl)amino]carbonyl]-2,6-difluorobenzamide), produced .apprx. 1/2 as many sperm as males treated with busulfan. Males fed 0.09% busulfan + 0.35% hempa (hexamethylphosphoric triamide) in the adult diet produced .apprx. 1/4 as many sperm as males treated with busulfan alone. Laboratory males produced .apprx. 2.4 times more sperm than overwintered males. Laboratory males were 2.5 times more attractive than overwintered males.

Descriptors/Keywords: ANTHONOMUS-GRANDIS, HEMPA, BUSULFAN, CHEMO STERILANT, DIFLUBENZURON, GROWTH REGULATOR, RADIATION

Record - 879

EFFICACY OF SYNTHETIC PYRETHROIDS AND 2 NEWER COMPOUNDS AGAINST BRINJAL
SHOOT AND FRUIT BORER LEUCINODES ORBONALIS

NIMBALKAR R B; AJRI D S

INDIAN J ENTOMOL 43 (2). 1981. 202-204.

Full Journal Title: Indian Journal of Entomology

Language: ENGLISH

Descriptors/Keywords: PERMETHRIN, CYPERMETHRIN, FENVALERATE, DECAMETHRIN, DIFLUBENZURON, STATISTICS

Record - 880

AN OVERVIEW OF THE ACUTE AND CHRONIC EFFECTS OF 1ST AND 2ND GENERATION PESTICIDES
ON AN ESTUARINE MYSID MYSIDOPSIS BAHIA

NIMMO D R; HAMAKER T L; MATTHEWS E; MOORE J C

VERNBERG, F. J. ET AL. (ED.). BIOLOGICAL MONITORING OF MARINE POLLUTANTS; SYMPOSIUM ON POLLUTION AND PHYSIOLOGY OF MARINE ORGANISM, MILFORD, CONN., USA, NOV. 7-9, 1979. XIII=559P. ACADEMIC PRESS, INC.: NEW YORK, N.Y., USA LONDON, ENGLAND. ILLUS. MAPS. ISBN 0-12-718450-3. 9 (0). 1981. P3-20

Language: ENGLISH

Document type: CONFERENCE PAPER

Descriptors/Keywords: DIAZINON, TREFLEN, KEPONE, TOXAPHENE, METHYL PARATHION
LEPTOPHOS, THIMET, SEVIN, DIMILIN, REPRODUCTION, LC-50, GROWTH INSECTICIDE

Record - 881

EFFECT OF DIFLUBENZURON ON AN ESTUARINE CRUSTACEAN MYSIDOPSIS BAHIA

NIMMO D R; HAMAKER T L; MOORE J C; SOMMERS C A

BULL ENVIRON CONTAM TOXICOL 22 (6). 1979. 767-770.

Full Journal Title: Bulletin of Environmental Contamination and Toxicology

Language: ENGLISH

Descriptors/Keywords: INSECTICIDE, REPRODUCTION SUPPRESSION, LIQUID
CHROMATOGRAPHY, CHITIN INHIBITOR

Record - 882

NIMMO, D. R., T. HAMAKER. J. MOORE, AND R. A. WOOD. 1978. ACUTE AND CHRONIC EFFECTS OF
DIMILIN ON SURVIVAL AND REPRODUCTION OF MYSIDOPSIS BAHIA. AQUATIC TOXICOLOGY. 2:366-
376.

Record - 883

PESTICIDES THEIR IMPACT ON THE ESTUARINE ENVIRONMENT

NIMMO D R

VERNBERG, W. B. ET AL. (ED.). MARINE POLLUTION: FUNCTIONAL RESPONSES;
PROCEEDINGS OF THE SYMPOSIUM ON POLLUTION AND PHYSIOLOGY OF MARINE
ORGANISMS, GEORGETOWN, S.C., USA, NOV. 14-17, 1977. XIII+454P. ACADEMIC PRESS,
INC.: NEW YORK, N.Y., USA; LONDON, ENGLAND. ILLUS. ISBN 0-12-718260-8. 0 (0). 1979.
P259-270.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: REVIEW, PELICAN, TELEOST, ENDRIIN, MALATHION, DDT, STROBANE,
CHLORDANE, ALTOSID, DIMILIN, KEPONE, TRIFLURALIN, PENTA CHLORO PHENOL,
FUNGICIDE, INSECTICIDE, HERBICIDE

Record - 884

THE DEGRADATION OF DIFLUBENZURON AND ITS CHIEF METABOLITES IN SOILS PART
III. FATE OF 2,6-DIFLUOROBENZOIC ACID

NIMMO W B; JOUSTRA K D; WILLEMS A G M

PESTIC SCI 29 (1). 1990. 39-46.

Full Journal Title: Pesticide Science

Language: ENGLISH

ABSTRACT

2,6-Difluorobenzoic acid, one of the two primary diflubenzuron metabolites, is rapidly and
completely degraded in soil. Times to 50% disappearance were 9 and 12 days in two agricultural soils.
[14C] Carbon dioxide was an ultimate product of the ring-14C-labelled compound. A part of the
radioactivity, increasing with time to one third of the applied dose of 1 mg kg⁻¹, could not be extracted
from the soil.

Descriptors/Keywords: AGRICULTURE, CARBON-14, CARBON DIOXIDE, RADIOACTIVITY,

PESTICIDE, AGRICHEMICAL

Record - 885

NIMMO, W. B. 1986. ADSORPTION OF DIFLUBENZURON TO SOILS. REPORT FOR DUPHAR, B. V. NO. 56635/07/1986.

Record - 886

NIMMO, W. B. AND C. W. RAVEN. 1986. LEACHING OF DIFLUBENZURON IN SOIL. REPORT DUPHAR B. V. NO., 56635/17/1986.

Record - 887

NIMMO, W. B. AND C. W. RAVEN. 1986. SUMMARIES ON FATE OF DIFLUBENZURON IN SOIL AND HYDROSOIL. REPORT DUPHAR B. V. 56635/18/1986.

Record - 888

NIMMO W. B. AND C. W. RAVEN. 1986. FATE OF DIFLUBENZURON IN NATURAL WATERS. REPORT DUPHAR B. V. NO. 56635/16/1986.

Record - 889

THE DEGRADATION OF DIFLUBENZURON AND ITS CHIEF METABOLITES IN SOILS PART II FATE OF 4 CHLOROPHENYLUREA

NIMMO W B; WILLEMS A G M; JOUSTRA K D; VERLOOP A

PESTIC SCI 17 (4). 1986. 403-411.

Full Journal Title: Pesticide Science

Language: ENGLISH

ABSTRACT

The fate of 4-chlorophenylurea in soils was studied with two preparations: one labelled with ¹⁴C in the phenyl ring and the other in the carbonyl group. The initial dose of 1 mg kg⁻¹ decreased to 50% in about 5 weeks in aerobic sandy clay and in about 16 weeks in anaerobic hydrosol. Soil treatment with each of the preparations resulted in the release of [¹⁴C]carbon dioxide, pointing to decarbonylation and ring opening. The fraction of non-extractable (soil-bound) radioactivity increased during incubation. Quantities of ring-¹⁴C-labelled and carbonyl-¹⁴C-labelled bound residues differed strongly in the aerobic soil but only slightly in the anaerobic hydrosol. It is assumed that two sorts of bound residues are formed from 4-chlorophenylurea: one is fairly stable and might consist of bound 4-chloroaniline or its transformation products, whereas the other is presumed to be a degradable derivative of 4-Chlorophenylurea.

Descriptors/Keywords: SOIL-BOUND RESIDUE, INSECT GROWTH REGULATOR, ENVIRONMENTAL FATE

Record - 890

NIMMO, W. B. 1985. MOBILITY OF DIFLUBENZURON IN SOIL. REPORT DUPHAR B. V.

Record - 891

NIMMO, W. B. P. C. DEWILDE, AND A. VERLOOP. 1985. THE DEGRADATION OF DIFLUBENZURON AND ITS CHIEF METABOLITES IN SOILS I. HYDROLYTIC CLEAVAGE OF DIFLUBENZURON. PESTIC. SCI. 15(6): 574-585.

Record - 892

THE DEGRADATION OF DIFLUBENZURON AND ITS CHIEF METABOLITES IN SOILS 1.
HYDROLYTIC CLEAVAGE OF DIFLUBENZURON

NIMMO W B; DE WILDE P C; VERLOOP A

PESTIC SCI 15 (6). 1984. 574-585.

Full Journal Title: Pesticide Science

Language: ENGLISH

ABSTRACT

[14C]Diflubenzuron is readily degraded in various agricultural soils and in hydrosol; 50% of the applied dose of 1 mg kg⁻¹ was metabolized in 2 days or less. The chief products of hydrolysis were identified as 4-chlorophenylurea and 2,6-difluorobenzoic acid. A part of the radioactivity, increasing with incubation time, could not be extracted. Release from the soil of [14C]CO₂, derived from both labeled phenyl rings, points to the ultimate mineralization of diflubenzuron.

Descriptors/Keywords: INSECT GROWTH REGULATOR, MINERALIZATION

Record - 893

NIMMO W. B. AND P. C. DEWILDE. 1984. DEGRADATION OF 4-CHLOROPHENYLUREA IN VARIOUS SOILS. REPORT DUPHAR. B. V.

Record - 894

NIMMO, W. B. AND P. C. DEWILDE. 1984. DEGRADATION OF DIFLUBENZURON IN A SANDY CLAY SOIL. REPORT DUPHAR. B. V.

Record - 895

NIMMO, W. AND P. DEWILDE. 1979. DEGRADATION OF DIFLUBENZURON IN A SANDY LOAM SOIL (SUPPLEMENTARY DATA): REPORT NO. 56635/14/1979. UNPUBLISHED STUDY RECEIVED OCT. 7, 1982 UNDER 46946-238; PREPARED BY PHILIPS-DUPHAR B.V. SUBMITTED BY THE AGRICULTURE & NUTRITION CO., KANSAS CITY, KS.

Record -896

NIMMO, W. G. AND P. C. DEWILDE. 1977. DEGRADATION OF DIFLUBENZURON IN MUSHROOM GROWTH MEDIUM AND UPTAKE OF ITS METABOLITES IN THE MUSHROOMS. REPORT PHILIPS-DUPHAR B. V.

Record - 897

NIMMO, W., K. JOUSTRA, AND P. DEWILDE. 1977. PROGRESS REPORT ON THE POSSIBLE APPEARANCE OF P-CHLOROANILINE, P,P'DICHLORAZOBENZENE AND P,P'DICHLORAZOXYGENZENE IN SOIL AND PLANT EXTRACTS FROM DIMILIN METABOLISM STUDIES: REPORT NO. 56635/17/1977. UNPUBLISHED STUDY RECEIVED JUL 31, 1978 UNDER 148-1259; PREPARED BY PHILLIPS DUPHAR, B. V. SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO.

Record - 898

NIMMO, W. AND P. DEWILDE. 1976. UPTAKE OF DIFLUBENZURON AND ITS METABOLITES FROM THE SOIL BY RICE AND WHEAT. REPORT 56635/8/1976. UNPUBLISHED STUDY RECEIVED JUL. 13.

1978 UNDER 134-1259, PREPARED BY PHILLIPS-DUPHAR B. V., SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO.

Record - 899

NIMMO, W. B. AND P. C. DEWILDE. 1976. RE-UPTAKE FROM DIFLUBENZURON TREATED SOIL BY SOYBEAN, MAIZE AND POTATO: REPORT NO. 56635/4/1976. UNPUBLISHED STUDY RECEIVED FEB. 10, 1976 UNDER 6G1744; PREPARED BY PHILLIPS-DUPHAR, B. V. SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO.

Record - 900

NIMMO, W. B. AND P. C. DEWILDE. 1975. DEGRADATION OF DIFLUBENZURON IN STERILE WATER AT PH 5, 7, 9, AND 12: REPORT NO. 56635/32/1975. UNPUBLISHED STUDY RECEIVED FEB. 10, 1976 UNDER 6G1744; PREPARED BY PHILLIPS-DUPHAR, B. V. SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 901

NIMMO, W. B. AND P. C. DEWILDE. 1974. FATE OF PH 60-40 APPLIED ON THE LEAVES OF CORN SOYBEAN, CABBAGE AND APPLE: REPORT 56635-16-1974; UNPUBLISHED STUDY RECEIVED DEC. 23, 1976 UNDER 148-1258; PREPARED BY PHILLIPS-DUPHAR B. V., NETHERLANDS, SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO.

Record - 902

NIMMO, W., AND P. DEWILDE. 1973. DEGRADATION OF TH-6040 AND TH-6038 IN SOIL, POND WATER, PLANTS AND FISH. REPORT 56635/20/19730. INTERIM REPORT. (UNPUBLISHED STUDY RECEIVED JAN 29, 1975, UNDER UNKNOWN ADMIN. NO., PREPARED BY PHILLIPS DUPHAR B.V., NETH., SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 903

NIMMO, W. B. AND P. C. DEWILDE. 1973. THE FATE OF PH 60-40 IN THE ENVIRONMENT. PART ONE: NATURAL WATER-AND SOIL/WATER SYSTEMS. REPORT PHILIPS-DUPHAR B. V.

Record - 904

NIMMO, W. AND P. DEWILDE. 1973. DEGRADATION OF TH-6040 AND TH-6038 IN SOIL, POND WATER, PLANTS AND FISH. REPORT 56635/20/19730. INTERIM REPORT. UNPUBLISHED STUDY RECEIVED JAN. 29, 1975, UNDER UNKNOWN ADMIN. NO. PREPARED BY PHILLIPS-DUPHAR B. V., NETH. SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 905

NOLLE, H. H., J. BUSSCHBACH, AND A. VERLOOP. 1975. MODE OF ACTION AND APPLICATION OF THE INSECTICIDE DIFLUBENZURON. MITT. BIOL. BUNDESANST LAND FORSTWIRTSCH (BERLIN-DAHLEM) 165: 161-162.

Record - 906

NORLAND, R. L., AND M. S. MULLA. 1974. EFFECT OF 2 IGR'S ON THE DENSITY OF SOME TARGET AND NON-TARGET ORGANISMS. REPORT THOMPSON-HAYWARD CHEMICAL COMPANY.

Record - 907

INHIBITION OF MELANOGENESIS IN B-16-F-1 MELANOMA CELLS AFTER EXPOSURE TO DIFLUBENZURON

NORMAN J O; MEOLA S M

ANTIMICROB AGENTS CHEMOTHER 23 (2). 1983. 313-316.

Full Journal Title: Antimicrobial Agents and Chemotherapy

Language: ENGLISH

Descriptors/Keywords: MOUSE, ANTINEOPLASTIC-DRUG

Record - 908

STERILIZATION OF THE PINE WEEVIL HYLOBIUS ABIETIS WITH DIFLUBENZURON

NOVAK V; SEHNAL F

ACTA ENTOMOL BOHEMOSLOV 75 (5). 1978. 349-351.

Full Journal Title: Acta Entomologica Bohemoslovaca

Language: ENGLISH

ABSTRACT

Weevils fed on pine branches dipped into Dimilin 25 W suspensions containing 125 ppm and 250 ppm, respectively, of diflubenzuron produced no viable progeny during the first 2-4 wk of treatment. During a 10 wk period the controls laid 47.2 eggs/female, 45.6 of which were fertile. Only 15.6 eggs/female hatched of 50.4 laid after application of 125 ppm; 5.6 of 47.8 after application of 250 ppm diflubenzuron. The treatments prevented eclosion of the 1st instar larvae from the eggshell. Normal reproduction was resumed when the treatment with Dimilin was discontinued.

Descriptors/Keywords: PINE BRANCHES, INSECTICIDE, DIMILIN

Record - 909

EFFECTS OF DIFLUBENZURON AND BENZOYL PEROXIDE ON THE DEVELOPMENT OF FIFTH INSTAR LARVAE OF TRIBOLIUM CONFUSUM

OAKLEY W E JR; KALMUS G W

J ELISHA MITCHELL SCI SOC 103 (3). 1987 (1988). 88-93.

Full Journal Title: Journal of the Elisha Mitchell Scientific Society

Language: ENGLISH

ABSTRACT

Fifth instar larvae of *Tribolium confusum*, the confused flour beetle, were used as a model to test the chitin synthesis inhibition potential of benzoyl peroxide and diflubenzuron. Flour was treated with each benzoyl derivative ranging from 0.01 to 100 ppm and progressive developmental stages of *T. confusum* were exposed to the treated flour for a 30 day period at 27.degree.C and 60% relative humidity. Results indicated a decrease in larval weight, a prolonged pupation period, a delay in onset of adult emergence, an increase in mortality rate, a decrease in chitin dry weight, and a drop in total protein concentration. Both treatments had similar effects. Thus, these data suggest that benzoyl derivatives may be used in the control of *T. confusum* and their action may cause the alteration of the chitin synthesis pathway.

Descriptors/Keywords: MOLTING, CHITIN SYNTHESIS, BODY WEIGHT, MORTALITY

Record - 910

BENZOYLPHENYL UREAS INHIBIT CHITIN SYNTHESIS WITHOUT INTERFERING WITH AMINO SUGAR UPTAKE IN IMAGINAL WING DISCS OF PLODIA INTERPUNCTELLA HUEBNER

OBERLANDER H; SILHACEK D L; LEACH E; ISHPPVPK; SHAAAYA E

ARCH INSECT BIOCHEM PHYSIOL 18 (4). 1991. 219-228.

Full Journal Title: Archives of Insect Biochemistry and Physiology

Language: ENGLISH

ABSTRACT

We tested the hypothesis that the inhibition of chitin synthesis by benzoylphenyl ureas could be explained by their effect on the uptake of GlcNAc into chitin. Our test system consisted of organ cultures of wing imaginal discs from *Plodia interpunctella*. These wing discs synthesize chitin in response to 20-hydroxyecdysone or RH 5849, a non-steroidal ecdysteroid mimic. Two benzoylphenyl ureas, diflubenzuron and teflubenzuron, inhibited ecdysteroid-dependent chitin synthesis in the wing discs. However, although chitin synthesis was inhibited, there was no corresponding diminution of amino sugar uptake by the imaginal discs. In another experiment 20-hydroxyecdysone stimulated uptake of two sugars, 2-deoxy-D-glucose and 3-O-methyl-D-glucose, which are not synthesized into chitin. Transport of these non-metabolized sugars was unaffected by the inhibitors. In an additional test of the effects on precursor transport, the action of ecdysone (alpha-ecdysone) was examined. Ecdysone stimulated amino sugar uptake, but not chitin synthesis. Neither diflubenzuron nor teflubenzuron inhibited ecdysone-dependent precursor transport. Finally, we examined ecdysteroid-induced uptake of amino sugars by an imaginal disc derived cell line IAL-PID2. In this case, also, GlcNAc transport was not inhibited significantly by either diflubenzuron or teflubenzuron. From these observations we conclude that inhibition of uptake of amino sugars does not account for the ability of teflubenzuron and diflubenzuron to inhibit chitin synthesis in *P. interpunctella* wing discs.

Descriptors/Keywords: INDIAN MEAL MOTH, INSECTICIDE, DIFLUBENZURON, TEFLUBENZURON, N ACETYLGLUCOSAMINE

Record - 911

O'CONNOR, C., L. EBNER, AND J. CONNER. 1977. SUBMISSION OF THOMPSON-HAYWARD CHEMICAL CO. IN SUPPORT OF REGISTRATIONS AND TOLERANCES FOR DIMILIN AS A COTTON, SOYBEAN AND MOSQUITO PESTICIDE. UNPUBLISHED STUDY RECEIVED FEB. 6, 1978 UNDER 148-1259, PREPARED BY SELLERS, CONNER & CUENO, SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 912

O'CONNOR, D. J. AND J. P. CONNOLLY. 1980. THE EFFECT OF CONCENTRATION OF ABSORBING SOLIDS ON THE PARTITION COEFFICIENT. WATER RES. 14 (10): 1517-1523.

Record - 913

IMPACT OF SOME MODERN INSECTICIDES ON ADALIA BIPUNCTATA L. MORTALITY AND FECUNDITY

OLSZAK R W; PAWLIK B

DIV. PLANT PROT. INST. POMOL. FLORICULTURE, 96-100 SKIERNIEWICE, POL.
KULCSAR, P. AND V. EASTOP (ED.). ABSTRACT VOLUME OF THE APHIDOPHAGA 4TH CONFERENCE; MEETING OF IOBC (INTERNATIONAL ORGANIZATION FOR BIOLOGICAL CONTROL) WORKING GROUP ECOLOGY OF APHIDOPHAGA; GODOLLO, HUNGARY, SEPTEMBER 3-7, 1990. 68P. PLANT PROTECTION INSTITUTE OF THE HUNGARIAN ACADEMY OF SCIENCES: BUDAPEST, HUNGARY. ILLUS. PAPER. ISBN 963-04-0422-2. 0 (0). 1990. 47.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: DIFLUBENZURON, CHLORFLUAZURON, TRIFLUMURON, FLUFENOXURON, FENOXYCARB, CYROMAZINE

Record - 914

THE INFLUENCE OF DIFLUBENZURON ON APPLE BLOSSOM WEEVIL ANTHONOMUS POMORUM L.
SURVIVAL AND REPRODUCTION

OLSAK R W

FRUIT SCI REP (SKIERNIEWICE) 15 (3). 1988. 123-128.

Full Journal Title: Fruit Science Reports (Skierniewice)

Language: ENGLISH

ABSTRACT

The effect of diflubenzuron on apple blossom weevil survival and reproduction in laboratory and field experiments was investigated during two successive years. The overwintered adults of this pest were collected during the first ten days of April in neglected orchards, and then used for laboratory observations and a field cage tests. Diflubenzuron (Dimilin 25 WP) was tested at concentrations of 125 mg/l, 250 mg/l and 375 mg/l a.i., compared with fenitrothion (Owadofos pl. 50) at a concentration of 750 mg/l a.i. and also with an untreated control. Results showed that diflubenzuron did not kill adult insects but reproduction of the treated insects was reduced by 50-74% and bud infestation by 21-75%.

Descriptors/Keywords: FENITROTHION, DIMILIN, OWADOFOS

Record - 915

BETA ECDYSONE LEVELS IN PHARATE PUPAE OF THE STABLE FLY
STOMOXYS CALCITRANS AND INTERACTION WITH THE CHITIN INHIBITOR
DIFLUBENZURON

O'NEILL M P; HOLMAN G M; WRIGHT J E

J INSECT PHYSIOL 23 (10). 1977 1243-1244.

Full Journal Title: Journal of Insect Physiology

Language: ENGLISH

ABSTRACT

The .beta.-ecdysone titer in pharate pupae of the stable fly, *S. calcitrans* (L.), exposed to diflubenzuron [Thompson-Hayward TH 6040; N-[[[(4-chlorophenyl)amino]carbonyl]-2,6-difluorobenzamide] as larvae in artificial diet was analyzed by high-pressure liquid chromatography. No significant differences between treated and control groups were found in the .beta.-ecdysone titers within the first 10 h after pupariation.

Descriptors/Keywords: HIGH PRESSURE LIQUID CHROMATOGRAPHY

Record - 916

PHARMACOKINETICS OF DIFLUBENZURON IN 2 TYPES OF CHICKENS

OPDYCKE J C; MENZER R E

J TOXICOL ENVIRON HEALTH 13 (4-6). 1984. 721-734.

Full Journal Title: Journal of Toxicology and Environmental Health

Language: ENGLISH

ABSTRACT

Pharmacokinetic parameters of [¹⁴C]diflubenzuron [insecticide] in White Leghorn (WL) egg-production chickens and Rhode Island Red/Barred Plymouth Rock (RIR/BPR) meat-production chickens after single 1 mg/kg i.v. and single 5 mg/kg oral doses were investigated to explain a breed-related egg residue-level difference (higher in WL chickens) after daily oral administration. Analysis of [¹⁴C]diflubenzuron concentration in blood vs. time indicated similar 2 compartment models for each bird type. [¹⁴C]Diflubenzuron elimination half-lives from the blood of WL and RIR/BPR chickens were 14.7 and 8.4 h, respectively. Absorption of [¹⁴C]diflubenzuron after a single 5 mg/kg oral dose was faster and more complete in RIR/BPR chickens. Absorption rate constants were 0.046 and 0.192/h for WL and RIR/BPR hens, respectively. The breed-related egg residue difference was

due to a larger peripheral compartment volume in RIR/BPR hens.

Descriptors/Keywords: WHITE LEGHORN, RHODE-ISLAND, RED X BARRED, PLYMOUTH-ROCK, INSECTICIDE, EGG RESIDUE, ORAL, BREED DIFFERENCE

Record - 917

METABOLISM AND FATE OF DIFLUBENZURON IN SWINE

OPDYCKE J C; MILLER R W; MENZER R E

J AGRIC FOOD CHEM 30 (6). 1982. 1223-1227.

Full Journal Title: Journal of Agricultural and Food Chemistry

Language: ENGLISH

ABSTRACT

[14C]-diflubenzuron [insecticide] was administered at 5 mg/kg to a female Duroc-Poland China pig as an oral dose. Analysis of feces for radioactivity revealed 82% of the administered dose, identified as diflubenzuron, while 5% of the dose was recovered in the urine. The highest [14C]diflubenzuron residue present in pig tissues was 0.43 ppm in the gallbladder. Identification of the metabolic products found in the urine revealed (4-chlorophenyl)urea, 2,6-difluorobenzoic acid, 4-chloroaniline and 2,6-difluorobenzamide. Cleavage of the urea moiety between the benzoyl C and urea N was indicated as the primary degradation pathway in swine.

Descriptors/Keywords: DUROC POLAND CHINA PIG, INSECTICIDE, URINE, FECES, GALLBLADDER

Record - 918

IN-VIVO AND LIVER MICROSOMAL METABOLISM OF DIFLUBENZURON BY 2 BREEDS OF CHICKENS

OPDYCKE J C; MILLER R W; MENZER R E

DEP. ENTOMOLOGY, UNIV. MARYLAND, COLLEGE PARK, MD 20742.

J AGRIC FOOD CHEM 30 (6). 1982. 1227-1233.

Language: ENGLISH

ABSTRACT

The metabolism and fate of [14C]diflubenzuron [insecticide] in White Leghorn (WL) and Rhode Island Red/Barred Plymouth Rock (RIR/BPR) chickens were studied after an oral dose of 5 mg/kg. Quantitation of [14C]diflubenzuron equivalents confirmed a breed-related 2-fold higher egg level in WL chickens. Biotransformation of small amounts of the compound with rapid excretion of unaltered diflubenzuron demonstrated its resistance to in vivo metabolism. WL chickens produced a higher percentage and greater number of metabolites in the excreta, but the breed-related egg residue difference was not completely a result of different in vivo metabolic rates. In vitro incubations of diflubenzuron using WL and RIR/BPR liver microsomal preparations showed < 10% conversion to metabolites. Induction or inhibition of mixed-function oxidase (MFO) activity did not alter diflubenzuron metabolism. The breed-related egg residue difference was not the result of MFO activity.

Descriptors/Keywords: WHITE LEGHORN, RHODE-ISLAND, RED X BARRED, PLYMOUTH-ROCK, EGG, MIXED FUNCTION OXIDASE, INSECTICIDE

Record - 919

OPDYCKE, J. C., R. W. MILLER, AND R. E. MENZER. 1976. METABOLISM AND FATE OF N-4 CHLOROPHENYUL-N-2-6-DIFLUOROBENZOYL UREA IN CHICKENS AND SWINE. TOXICOL. APP. PHARMACOL. 37(1): 96.

Record -920

OPDYCKE, J. C., R. E. MENZER, A. M. CAREY ET AL. 1975. SUMMARY PROGRESS REPORT: TH60940. UNPUBLISHED STUDY RECEIVED FEB 10, 1976 UNDER 6G1744; PREPARED BY U. S. DEPT. OF AGRICULTURE, APHIS, MPI AND UNIV. OF MARYLAND, DEPT. OF ENTOMOL., SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO.

Record - 921

CROSS RESISTANCE TO DIFLUBENZURON IN RESISTANT STRAINS OF HOUSE FLY
MUSCA DOMESTICA

OPPENORTH F J; VAN DER PAS L J T

ENTOMOL EXP APPL 21 (3). 1977 217-228.

Full Journal Title: Entomologia Experimentalis et Applicata

Language: ENGLISH

ABSTRACT

Cross-resistance to diflubenzuron was found in a large number of resistant strains of the housefly. Resistant strains were 3-10 times less sensitive than a susceptible strain when bred in medium containing the toxicant. Selection for 10 generations increased this resistance to about 50-fold. Cross-resistance was apparent against the effect of topically applied diflubenzuron on egg-hatch. A study of the fate of 3H-labeled diflubenzuron after topical application to the susceptible and most resistant strain showed a very slow penetration and the presence of only minute amounts of the compound within flies of both strains. The amounts of unchanged diflubenzuron in the susceptible strain were about 2-3-fold larger than those in the resistant one, probably due to a difference in detoxication rate. The presence of cross-resistance, especially to the effect on egg-hatch, should serve as a warning that this effect can be lost on selection.

Descriptors/Keywords: INSECTICIDE, DE TOXICATION, EGG HATCH

Record - 922

EFFECT OF THE ANTI-MOLTING AGENT DIMILIN ON THE BLOOD PICTURE AND CUTICLE FORMATION IN SPODOPTERA LITTORALIS BOISD. LARVAE

OSMAN S E; RAWASH I; EL-SAMADISI M M

BULL ENTOMOL SOC EGYPT ECON SER 0 (14). 1984-1985 (1986). 37-46.

Full Journal Title: Bulletin of the Entomological Society of Egypt Economic Series

Language: ENGLISH

ABSTRACT

The feeding of 2nd instar *S. littoralis* larvae with artificial diet containing 5 ppm Dimilin (LC50) raised the THC and caused sharp variation in the proportion percentages of DHC. The treated larvae showed development delay and cuticular reduction due to prolonged time of moulting process and inhibition of cuticle synthesis.

Descriptors/Keywords: HEMOCYTE COUNT, CUTICLE SYNTHESIS

Record - 923

EFFECT OF DIFLUBENZURON ON REPRODUCTION AND DEVELOPMENT OF GRAPHOGNATHUS PEREGRINUS AND GRAPHOGNATHUS LEUCOLOMA

OTTENS R J; TODD J W

J ECON ENTOMOL 72 (5). 1979. 743-746.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Reproductive inhibition by diflubenzuron (Dimilin) was demonstrated in the whitefringed beetles, *G.*

peregrinus (Buchanan) and *G. leucoloma* (Boheman). Direct application to *G. peregrinus* eggs caused substantial reduction in hatchability with young eggs (0-14 days old) slightly more susceptible than older eggs (15-28 days old). Application to prepupal larvae of *G. peregrinus* significantly reduced adult eclosion. Adult *G. peregrinus* and *G. leucoloma* fed diflubenzuron-treated foliage [soybean] in the laboratory produced eggs with greatly reduced or no hatch. In studies using potted plants [soybean] in the field, larval populations resulting from adults that fed on diflubenzuron-treated soybean plants were much lower than those of untreated checks.

Descriptors/Keywords: SOYBEAN, INSECT GROWTH REGULATOR, EGG HATCHABILITY, EGG AGE, ADULT ECLOSION

Record - 924

OVERBECK, H. 1979. EFFECTS OF DIMILIN ON THE EGG STAGE OF THE CARROTT FLY, PSILA ROSAE F. (DIPTERA: PSILIDAE). NACHRICHTENBLATT DES DEUTSCHEN PFLANZENSCHUTZDIENSTES. 31(7): 99-102.

Record - 925

COMPARATIVE TOXICITY OF ACEPHATE DIFLUBENZURON AND MALATHION TO LARVAE OF THE LARCH CASEBEARER COLEOPHORA LARICELLA LEPIDOPTERA COLEOPHORIDAE AND ADULTS OF ITS PARASITES CHRYSOCHARIS LARICINELLAE AND DICLADOCERUS NEARCTICUS

PAGE M; RYAN R B; RAPPAPORT N; SCHMIDT F

ENVIRON ENTOMOL 11 (3). 1982. 730-732.

Full Journal Title: Environmental Entomology

Language: ENGLISH

ABSTRACT

Fourth-instar larch casebearer, *Coleophora laricella* (Huebner), was significantly less susceptible to acephate and malathion than were adults of its parasites, *Chrysocharis laricinellae* (Ratz.) and *Dicladocerus nearcticus* Yoshimoto ($P < 0.01$). The parasites were more tolerant ($P < 0.01$) than the hosts to diflubenzuron. Malathion was equally toxic to both parasite species. *D. nearcticus* was more tolerant of the parasites to both acephate and diflubenzuron.

Descriptors/Keywords: TOLERANCE

Record - 926

PANIZZA DALLA MONTA', L. 1977. TRIALS TO CONTROL THE FRUIT TREE TORTRIX MOTH ARCHIPS PODANA SCOP. AND SUMMERFRUIT TORTRIX MOTH ADOXOPHYES RETICULANA (LEPIDOPTERA-TORTRICIDAE) WITH COMBINATION OF SEXUAL TRAP AND DIFLUBENZURON (DIMILIN). AGRIC. VENEZIE 31(6): 223-235. ENG. SUMMARY.

Record - 927

PASQUALINI, E. AND C. MALAVOLTA. 1986. NATURAL CONTROL OF PANONYCHUS ULMI IN APPLE ORCHARDS OF EMILIA-ROMAGNA, ITALY. BULL. IST. ENTOMOL. UNIV. STUDY, BOLOGNA 39:(0): 221-230.

Record -928

PELEG, B. A. 1983. EFFECT OF 3 INSECT GROWTH REGULATORS ON LARVAL DEVELOPMENT FECUNDITY AND EGG VIABILITY OF THE COCCINELID CHILOCORUS BIPUSTULATUS (COLEOPTERA: COCCINELIDAE). ENTOMOPHAGA 23(2): 117-121.

Record - 929

EFFECT OF THE INSECT GROWTH REGULATORS DIFLUBENZURON AND METHOPRENE ON SCALE INSECTS

PELEG B-A; GOTHILF S

J ECON ENTOMOL 74 (1). 1981. 124-126.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Larval stages of 2 diaspid, *Chrysomphalus aonidum* (L.) and *Aonidiella aurantii* (Maskell), and 2 coccids, *Saissetia oleae* (Olivier) and *Ceroplastes floridensis* Comstock, were sprayed with the insect growth regulators diflubenzuron and methoprene. No effect of diflubenzuron on the development of the insects tested was noticed. Methoprene at a concentration of 0.015% inhibited emergence of male *C. aonidum* when applied to 1st or 2nd instars and at 0.1% prevented emergence of male *A. aurantii* when treated as 2nd instars. Development of female *C. aonidum* treated as 1st instars was inhibited after application of 0.05% methoprene. Females of the 2 armored scales were not affected when subjected to methoprene as 2nd instars. The development of *S. oleae* and *C. floridensis*, which are uniparental in Israel, was severely affected by methoprene treatment at a concentration of 0.015 and 0.03%, respectively.

Descriptors/Keywords: CHRYSOMPHALUS-AONIDUM, AONIDIELLA-AURANTII, SAISSETIA-OLEAE, CEROPLASTES-FLORIDENSIS, INSTAR

Record - 930

PELS, T. 1979. REVIEW OF RESIDUES OF DIFLUBENZURON AND ITS METABOLITES IN MUSHROOMS. REPORT NO. 56683/2/79. UNPUBLISHED SUMMARY OF DATA FROM EIGHT EUROPEAN TRIALS BY PHILLIPS-DUPHAR B. V. 3 PAGES.

Record - 931

HISTOPATHOLOGICAL EFFECTS OF TWO INSECT CHITIN INHIBITORS IN THE ALIMENTARY CANAL OF CHIRONOMID MIDGES DIPTERA CHIRONOMIDAE

PELSUE F W

BULL SOC VECTOR ECOL 10 (2). 1985. 72-89.

Full Journal Title: Bulletin of the Society of Vector Ecologists

Language: ENGLISH

Descriptors/Keywords: CHIRONOMUS-DECORUS, TANYPUS-GRODHAUSI, DIFLUBENZURON, BAY-SIR-8514, INSECT GROWTH REGULATOR

Record - 932

MORPHOPATHOLOGICAL EFFECTS OF INSECT CHITIN INHIBITORS ON CHIRONOMIDAE DIPTERA

PELSUE F W

BULL SOC VECTOR ECOL 10 (1). 1985. 23-29.

Full Journal Title: Bulletin of the Society of Vector Ecologists

Language: ENGLISH

ABSTRACT

During studies of the effects of the insect chitin inhibitors diflubenzuron (1-(4-chlorophenyl)-3-(2-chlorobenzoyl))-urea and Bay SIR-8514 (1-(4-trifluoromethoxyphenyl)-3-(2-chlorobenzoyl))-urea on chironomids, it was noted that certain morphological anomalies become evident in treated larvae that die during molting. Many of the dead *Chironomus decorus* Johannsen larvae treated with high concentrations of Bay SIR-8514 exhibited a morphopathological "hump" that was found in the area

of the thorax just behind the old larval head capsule exuviae. No morphopathological effects were evident in tanypus grodhausi Sublette larvae treated with Bay SIR-8514. The typical abnormal conditions in this species consisted of ruptures in the old cuticle with the alimentary tract protruding or, presumably, food material from the new instar regurgitated into the old larval skin in the anterior region just before or at the time of death. The only morphopathology observed at the time of molting in either species treated with diflubenzuron was the presence of undeveloped eye spots on the head capsule. Both chitin inhibitors produced a variety of morphopathological conditions during the molting process.

Descriptors/Keywords: CHIRONOMUS-DECORUS, TANYPUS-GRODHAUSI, DIFLUBENZURON, BAY-SIR-8514, 1-4 TRIFLUOROMETHOXYPHENYL-3-2-CHLOROBENZOYLUREA, MOLTING

Record - 933

PELSUE, F. W., G. C. MCFARLAND, AND G. C. BEESLEY. 1974. FIELD EVALUATION OF TWO INSECT GROWTH REGULATORS AGAINST CHIRONOMID MIDGES IN WATER SPREADING BASINS. PROC. ANNUAL CONFERENCE CALIFORNIA MOSQUITO CONTROL ASSOCIATION. PP. 157-163.

Record - 934

IN-VITRO CYTOTOXIC AND CELL TRANSFORMING ACTIVITIES EXERTED BY THE PESTICIDES CYANAZINE DITHIANON DIFLUBENZURON PROCYMIDONE AND VINCLOZOLIN ON BALB C T3 CELLS

PEROCCO P; COLACCI A; GRILLI S

ENVIRON MOL MUTAGEN 21 (1). 1993. 81-86.

Full Journal Title: Environmental and Molecular Mutagenesis

Language: ENGLISH

ABSTRACT

Cytotoxic and cell transforming activities of the pesticides cyanazine, diflubenzuron, dithianon, procymidone, and vinclozolin were investigated in vitro by utilizing the BALB/c 3T3 cell transformation test performed in the presence or in the absence of S-9 mix as an exogenous bioactivation system for the chemicals. All the assayed pesticides were cytotoxic in the absence of S-9 mix, whereas only dithianon exerted cytotoxic effects in the presence of metabolic activation. All the chemicals tested did induce BALB/c 3T3 cell transformation, to a various extent, in the absence of S-9 mix. Cell transforming ability of cyanazine and diflubenzuron was not detectable in the presence of S-9.

Descriptors/Keywords: MICE, CARCINOGENESIS, ENVIRONMENTAL RISK

Record - 935

FIELD TESTS WITH TWO NEW INSECT GROWTH REGULATORS FOR THE CONTROL OF DIAMONDBACK MOTH PLUTELLA XYLOSTELLA L

PETER C; SUNDARARAJAN R

INDIAN J PLANT PROT 19 (2). 1991. 161-166.

Full Journal Title: Indian Journal of Plant Protection

Language: ENGLISH

ABSTRACT

Two new insect growth regulators, teflubenzuron and flufenoxuron were tested in the field for two seasons at Hosur in Tamil Nadu [India] for the control of diamondback moth, *Plutella xylostella* L. which has developed resistance to a large number of insecticides. Both compounds were found to be highly effective against diamondback moth and performed significantly compared with diflubenzuron. Application of teflubenzuron at 45 g a.i./ha and flufenoxuron at 20 g a.i./ha resulted in significant yield increase and superior crop quality [*Brassica oleracea* var. capitata].

Descriptors/Keywords: BRASSICA-OLERACEA-VAR-CAPITATA, CROP YIELD INCREASE,

TEFLUBENZURON, FLUFENOXURON, DIFLUBENZURON, TAMIL NADU, INDIA

Record - 936

PETER, S. J. 1987. FACT SHEET ON DIMILIN: A SUMMARY OF ISSUES PERTINENT TO THE USE OF DIMILIN IN GYPSY MOTH CONTROL PROGRAMS. REPORT NO. C.303.0503. B. V. DUPHAR, WEESP, THE NETHERLANDS.

Record - 937

PETROCELLI, S. R. AND R. PARRISH. 1975. THE ACUTE AND SUBCHRONIC TOXICITY OF R-20458, ALTOSID AND TH-6040 TO THE GRASS SHRIMP, PALAEMONETES PUGIO. REPORT BIONOMICS E G & G, INC., FLORIDA FW-3.

Record - 938

PETRUSHOVA, N. I., G. V. MEDVEDEVA, D. V. SOKOLOVA, AND M. M. EIDEL'BERT. 1987. USE OF DIMILIN FOR CONTROLLING THE APPLE WORM. ZASHCHITA RASTENII. (5):39-40.

Record - 939

FACE FLY INHIBITION OF HATCH BY DIFLUBENZURON AND RELATED ANALOGS

PICKENS L G; DEMILO A B

J ECON ENTOMOL 70 (5). 1977 595-597.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

When mixed sexes of 1-2 day old adult *Musca autumnalis* De Geer were fed diflubenzuron (N-[[[(4-chlorophenyl)amino]carbonyl]-2,6-difluorobenzamide] in a diet or were exposed to diflubenzuron by surface contact, egg hatch was severely inhibited. In 3 treatments, untreated females produced few viable eggs when crossed with treated males. Optimum inhibition of egg hatch occurred when either sex was exposed for 15 min to a surface coated with a diflubenzuron dust (25% WP). Three closely related analogues of diflubenzuron (AI3-63219, AI3-63220, and AI3-63223) also inhibited hatch but none was significantly better than diflubenzuron.

Descriptors/Keywords: MUSCA-AUTUMNALIS, GROWTH REGULATOR INSECTICIDE

Record - 940

PIEPER, G. R., R. B. ROBERTS AND J. E. LARSON. 1977. RESIDUE ANALYSIS OF CARBARYL, DIFLUBENZURON AND ACEPHATE IN FOLIAGE, DUFF, WATER, SOIL, SEDIMENT AND BEE POLLEN (RE. DI-5430 AND DE-5520). FINAL REPORT DOUGLAS-FIR TUSOCK MOTH R & D PROGRAM RA-8.

Record - 941

EFFECT OF SESAMEX ON THE IN-VIVO METABOLISM OF DIFLUBENZURON IN LARVAE OF SUSCEPTIBLE AND RESISTANT STRAINS OF THE HOUSE FLY MUSCA DOMESTICA

PIMPRIKAR G D; GEORGHIOU G P

J AGRIC FOOD CHEM 30 (3). 1982. 615-618.

Full Journal Title: Journal of Agricultural and Food Chemistry

Language: ENGLISH

ABSTRACT

The effect of sesamex [5-[1-[2-(2-ethoxyethoxy)ethoxy]ethoxy]-1,3-benzodioxole] on the in vivo metabolism of diflubenzuron [1-(2,6-difluorobenzoyl)-3-(4-chlorophenyl)urea] was investigated on a

susceptible (NAIDM) and 2 resistant (R-diflubenzuron and R-OMS-12) strains of the housefly. Sesamex reduced significantly the in vivo metabolism of radiolabeled diflubenzuron in all strains. Recovery of internal unmetabolized diflubenzuron was 10-30 times higher in the mature larvae of the R strains when the compound was applied jointly with sesamex. Similarly, sesamex reduced markedly the recovery of polar and nonpolar metabolites of water-soluble conjugates of diflubenzuron both in the external and in the internal fractions of these strains. The recovery of radiolabel in the unextractable residue increased with sesamex treatment in all 3 strains. These results indicate that MFO [mixed function oxidase] enzymes play an important role in the resistance of houseflies to diflubenzuron.

Descriptors/Keywords: MIXED FUNCTION OXIDASE, 5-1-2-2
ETHOXYETHOXYETHOXYETHOXY-B-3 BENZODIOXOLE, RADIO LABEL

Record - 942

MECHANISMS OF RESISTANCE TO DIFLUBENZURON IN THE HOUSE FLY
MUSCA DOMESTICA

PIMPRIKAR G D; GEORGHIOU G P

PESTIC BIOCHEM PHYSIOL 12 (1). 1979. 10-22.

Full Journal Title: Pesticide Biochemistry and Physiology

Language: ENGLISH

ABSTRACT

The mechanisms of resistance to the chitin synthesis inhibitor diflubenzuron were investigated in a diflubenzuron-selected strain of the housefly (*M. domestica* L.) with > 1000 times resistance, and in an OMS-12-selected strain [O-ethyl O-(2,4-dichlorophenyl)phosphoramidothioate] with 380 times resistance to diflubenzuron. Chitin synthesis was reduced less in larvae of the resistant (R) than of a susceptible (S) strain. Cuticular penetration of diflubenzuron into larvae of the R strains was about 1/2 that of the S. Both piperonyl butoxide and sesamex synergized diflubenzuron markedly in the R strains, indicating that mixed-function oxidase enzymes play a major role in resistance. Limited synergism by DEF (S,S,S-tributyl phosphorotrithioate) and diethylmaleate indicated that esterases and glutathione-dependent transferases play a relatively small role in resistance. Larvae of the S and R strains exhibited a similar pattern of in vivo cleavage of 3H- and 14C-labeled diflubenzuron at N1-C2 and N1-C1 bonds. There were marked differences in the amounts of major metabolites produced: R larvae metabolized diflubenzuron at considerably higher rates, resulting in 18-fold lower accumulation of unmetabolized diflubenzuron by comparison with S larvae. Polar metabolites were excreted at a 2-fold higher rate by R larvae. High levels of resistance to diflubenzuron in R-diflubenzuron and R-OMS-12 larvae are due to the combined effect of reduced cuticular penetration, increased metabolism and rapid excretion of the chemical.

Descriptors/Keywords: CHITIN SYNTHESIS OXIDASE, ENZYMES, SYNERGISM, EXCRETION

Record - 943

PITCHER, F. G. 1973. TH6040: BLUEGILL (LEPOMIS MACROCHIRUS). U S AGRICULTURAL RESEARCH SERVICE, PESTICIDES REGULATION DE., ANIMAL BIOLOGY LAB., UNPUBLISHED STUDY.

Record - 944

POIRIER, D. G. AND G. A. SURGEONER. 1987. "TOXICITY OF THE INSECT GROWTH REGULATOR DIFLUBENZURON TO STREAM INVERTEBRATES", DEPT. OF ENV. BIOLOGY, UNIVERSITY OF GUELPH, GUELPH, ONTARIO.

Record - 945

POLIAKOV, V. A. 1981. TESTING BIOLOGICAL PREPARATIONS AND DIMILIN FOR THE CONTROL OF LEAF-EATING PESTS OF FORESTS (CATERpillARS, LEPIDOPTERA). LESNOE KHOZIAISTVO. 1981 (1): 55-56. MOSKAVA: MINISTERSTVO LESNOGO KHOZIAISTVA SSSR.

Record - 946

POWELL, J. E., E. G. KING JR., AND C. S. JANY. 1986. TOXICITY OF INSECTICIDES TO ADULT MICROPLITIS CROCEIPES (HYMENOPTERA-BRACONIDAE). J. ECON. ENTOMOL. 79(5): 1343-1356.

Record - 947

A TRIAL EXPERIMENT TO SUPPRESS THE POPULATION OF CORCYRA CEPHALONICA

PRASAD A; SAXENA S C

J ENVIRON BIOL 11 (2). 1990. 179-181.

Full Journal Title: Journal of Environmental Biology

Language: ENGLISH

ABSTRACT

Insect growth regulators are the compounds that are highly effect against the biological activity of the insects. Various effects of hese compounds on the insects have been established by many workers (Saxena and Mathur 1981, Saxena and Kaushik 1986, Moore et al. 1975). The present is a trial experiment on small scale to assess the effectiveness of the compound Penfluron, Diflubenzuron, and Furyltriazine to suppress the population of Corcyra cephalonica.

Descriptors/Keywords: INSECT GROWTH REGULATOR, PENFLURON, DIFLUBENZURON, FURYLTRIAZINE

Record - 948

RESIDUAL TOXICITY AND PERSISTENCY TEST WITH THREE INSECT GROWTH REGULATORS AGAINST RED COTTON BUG DYSDERCUS CINGULATUS

PRASAD A; SAXENA S C

J ENVIRON BIOL 11 (1). 1990. 93-96.

Full Journal Title: Journal of Environmental Biology

Language: ENGLISH

Descriptors/Keywords: HUMAN OCCUPATIONAL HEALTH, FURYLTRIAZINE, PENFLURON, DIFLUBENZURON, CHITIN INHIBITION

Record - 949

BIOEFFICACY OF CHITIN INHIBITORS SYNTHETIC PYRETHROID ORGANOPHOSPHATE AND CARBAMATE INSECTICIDES FOR THE CONTROL OF EARIAS VITELLA

PRASAD B V; RAMASUBBIAH K; RAO V R S

INDIAN J AGRIC SCI 56 (9). 1986. 671-673.

Full Journal Title: Indian Journal of Agricultural Sciences

Language: ENGLISH

ABSTRACT

Of the 5 insecticides, 0.01% cypermethrin reduced the infestation of Earias vitella Fabricius larvae to 3.21% on okra [*Abelmoschus esculentus* (Linn.) Moench], followed by 0.13% SIR 8514 (6.75%) and 0.05% diflubenzuron (7.23%) compared with 17.85% in the control [India].

Descriptors/Keywords: ABELMOSCHUS-ESCULENTUS, OKRA, CYPERMETHRIN, DIFLUBENZURON, SIR-8514 INSECT GROWTH REGULATOR, INDIA

Record - 950

ABSENCE OF EFFECTS OF INSECTICIDES ON SUSCEPTIBILITY OF ANOPHELINES TO PLASMODIUM YOELII NIGERIENSIS

PRASITTISUK C; CURTIS C F

SOUTHEAST ASIAN J TROP MED PUBLIC HEALTH 13 (1). 1982. 127-132.

Full Journal Title: Southeast Asian Journal of Tropical Medicine and Public Health

Language: ENGLISH

ABSTRACT

Treatments at 1/10 or 1/2 of the LC50 of DDT, malathion or Dimilin had no effect on the susceptibility level to rodent malaria of genetically susceptible strains of *Anopheles gambiae* or *A. stephensi*. A similar DDT treatment for a genetically refractory strain did not disturb the refractoriness to rodent malaria. Selection for DDT resistance, producing a 6-fold increase in LT50 [mean time to death] to this insecticide, had no appreciable concomitant effect on rodent malaria susceptibility.

Descriptors/Keywords: ANOPHELES-GAMBIAE, ANOPHELES-STEPHENSII, RODENT, MALARIA, DDT, MALATHION, DIMILIN

Record - 951

CONTROL OF MEALYBUGS ON CALADIUM HORTULANUM

PRICE J F

PROC FLA STATE HORTIC SOC 0 (92). 1979 (1980). 358-360.

Full Journal Title: Proceedings of the Florida State Horticultural Society

Language: ENGLISH

ABSTRACT

Four tests were conducted to evaluate chemical control of the striped mealybug [*Ferrisia virgata* (Cockerell)] on *C. hortulanum* Birdsey cv. Candidum and Frieda Hemple foliage and tubers. Mealybugs on foliage were controlled best by SBP 1513 ITEC and Vydate 2L following 4 weekly foliar spray applications of those materials and Dimilin 25W. Dimilin reduced populations by about half. SBP 1513 ITEC provided the most effective control 21 days after treatment when these 3 chemicals were used as dips for caladium tubers. Ficam dip treatments provided excellent control of mealybugs on tubers. Metasystox R 2E, Orthene 75S or Chevron X-77 spreader demonstrated no significant effect on striped mealybug populations when applied as dips to infested caladium tubers. No phytotoxicity was observed with any of the chemical treatments.

Descriptors/Keywords: FERRISIA-VIRGATA CULTIVARS CANDIDUM, FRIEDA-HEMPLE, DIP, TUBER, SBP-1513-ITEC, VYDATE 2L, DIMILIN, FICAM, METASYSTOX R-2E, ORTHENE 75S, CHEVRON X-77, PHYTO TOXICITY

Record - 952

PRIDANTSEV, E. A., N. A. POPOVA AND V. P. LUK'LANCHIKOV. 1980. DIMILIN FOR THE CONTROL OF ANOPHELES MACULIPENNIS MESSEAE FALL. AND CRICOTOPUS SILVESTRI LARVAE IN THE KRASNODAR REGION. MEDITSINSKAIA PARAZITOLOGII I PARAZITARNYE BOLEZNI. 49(3): 53-57. MOSKVA, "MEDITSINA".

Record - 953

PRIDMORE, R. B. AND A. B. MCKAGUE. 1978. DEVELOPMENT OF NEW METHODS FOR THE CONTROL OF BITING FLIES IN NORTHERN CANADA. REPORT B. C. RESEARCH, VANCOUVER, CANADA.

Record - 954

PUNNALAH, K. C., V. R. RAO, K. RAMASUBBALAH, AND V. V. L. MAYURAVALLI. 1984. EFFECT OF DIFLUBENZURON ON LARVAE AND PUPAE OF GARDEN HAIRY CATERPILLAR PERICALLIA RICINI. THE ANDHRA AG. JOURNAL 31(2): 163.

Record - 955

DIFFERENTIAL AGE SUSCEPTIBILITY OF THE CODLING MOTH LEPIDOPTERA TORTRICIDAE TO CHITIN SYNTHESIS INHIBITORS AND THURINGIENSIN

PURCELL M; GRANETT J

J ECON ENTOMOL 79 (6). 1986. 1624-1626.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

The concentration-response of *Cydia pomonella* eggs and first instars to chitin synthesis inhibitors diflubenzuron, triflumuron, and CGA 112913 (2,6-difluoro-N-[[[4-[3-chloro-5-trifluoromethyl]-2-pyridinyloxy]3,5-dichlorophenyl]amino]carbonyl]benzamide), and the beta-exotoxin thuringiensin was determined in laboratory bioassays. Phosalone, the insecticide currently used for codling moth control in walnuts, was included in the tests for comparative purposes. Eggs were topically treated and larvae were fed surface-treated synthetic diet. Diflubenzuron and triflumuron were most toxic to 0- to 2-day-old eggs, and CGA 112913 and thuringiensin were nontoxic. In contrast, CGA 112913 was the most toxic compound to first instars: LC50 was 300-fold lower than LC50 for eggs. Triflumuron and diflubenzuron were 6- and 50-fold less toxic to first instars than to eggs, respectively, but still within the same range of toxicity as phosalone. LC50 of thuringiensin against first instars was also similar to that of phosalone. To determine the most sensitive period in the egg stage to triflumuron, hatch rates of 0- to 2-day-old eggs were compared with 2- to 4-day-old eggs. Because mortality of treated 2- to 4-day-old eggs was significantly lower than mortality of 0- to 2-day-old eggs, the critical stage for chitin synthesis occurs between 0 and 2 days. If applied to eggs, timing of sprays may be important.

Descriptors/Keywords: CGA-112913, DIFLUBENZURON, TRIFLUMURON, INSECT GROWTH REGULATOR, BIOASSAY, AGRICULTURE

Record - 956

PURCELL, M. AND J. GRANETT. 1985. TOXICITY OF BENZOYLPHENYLUREAS AND THURINGINESIN TO TRIOSYS PALLIDUS (HYMENOPTERA BRACONIDAE) AND THE WALNUT APHID CHROMAPHIS JUGLANDICOLA (HOMOPTERA APHIDIDAE). J. ECON. ENTOMOL. 78(5): 1133-1137.

Record - 957

QUARLES, J. M., J. O. NORMAN, AND L. F. KUBENA. 1980 ABSENCE OF TRANSFORMATION BY DIFLUBENZURON IN A HOST-MEDIATED TRANSPLACENTAL CARCINOGEN ASSAY. BULL. OF ENVIRO. CONTAM. AND TOXICOL. 25(2): 252-256.

Record - 958

JUVENILE HORMONE ACTIVITY OF 4 PHOSPHONIUM COMPOUNDS IN AEDES AEGYPTI LARVAE

QURESHI S A; MOHIUDDIN S; BADAR Y

PAK J SCI IND RES 24 (3). 1981. 105-108.

Full Journal Title: Pakistan Journal of Scientific and Industrial Research

Language: ENGLISH

ABSTRACT

Four organophosphorus compounds were tested for their biological activity on the 4th instar larvae of *A.*

aegypti (L). Longer exposure to higher doses of these compounds (0.21-4 ppm) produced morphogenetic effects commonly observed after the treatment of insect growth regulators. The activity of these test compounds cannot be equated with the standard juvenoids such as dimilin and methoprene, making these compounds marginal in term of use as insect growth regulators.

Descriptors/Keywords: INSECT GROWTH REGULATOR, DIMILIN, METHOPRENE

Record - 959

RABENI, C. AND K. E. GIBBS. 1977. THE EFFECTS OF DIMILIN ON NON TARGET STREAM INSECTS IN MAINE, 1975. REPORT THOMPSON-HAYWARD CHEMICAL COMPANY NO. C4324.

Record - 960

RABENORT, B., P. C. DEWILDE, F. G. DEBOER, P. K. KORVER, S. J. DEPRIMA, AND R. D. CANNIZZARO. 1978. DIFLUBENZURON. ANAL. METHODS PEST. PLANT GROWTH REGULATOR. PP. 57-72.

Record - 961

CONTROL OF THE CABBAGE WEBWORM CROCIDOLOMIA BINOTALIS ZELL. ON MUSTARD WITH BACILLUS THURINGIENSIS BERLINER AND OTHER INSECTICIDES

RABINDRA R J; JAYARAJ S

J BIOL CONTROL 2 (1). 1988. 56-57.

Full Journal Title: Journal of Biological Control

Language: ENGLISH

ABSTRACT

Descriptors/Keywords: LARVA, DIFLUBENZURON, MONOCROTOPHOS, ENDOSULFAN, EFFICACY, EXPERIMENTAL DESIGN

Record -962

DIFLUBENZURON AND SOME NEW INSECTICIDES FOR THE GROUNDNUT RED HAIRY CATERPILLAR AMSACTA ALBISTRIGA

RABINDRA R J; BALASUBRAMANIAN M

REGUPATHY, A. AND S. JAYARAJ (ED.). BEHAVIOURAL AND PHYSIOLOGICAL APPROACHES IN PEST MANAGEMENT; MEETING, COIMBATORE, MADRAS, INDIA, JUNE 21-23, 1984. XVIV++218P. TAMIL NADU AGRICULTURAL UNIVERSITY: COIMBATORE, MADRAS, INDIA. ILLUS. PAPER. 0 (0). 1985. 175-178.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: METHOMYL, MONOCROTOPHOS, FENVALORATE, INSECT GROWTH REGULATOR

Record - 963

THE EFFECT OF DIFLUBENZURON ON THE CASTOR SEMI LOOPER ACHOEIA JANATA LEPIDOPTERA NOCTUIDAE

RABINDRA R J; BALASUBRAMANIAN M

ENTOMON 6 (1). 1981. 15-18.

Full Journal Title: Entomon

Language: ENGLISH

ABSTRACT

Diflubenzuron disrupted the growth and metamorphosis in larvae of *A. janata* Linn. Even the lowest concentration tested (0.05 g/l) inhibited molting and caused mortality, up to 96.0%. Concentrations above 0.05 g/l resulted in 100% mortality. Due to treatment with the compound, various morphological deformities were observed in the pupae. Histological sections of treated insects revealed irregular cuticle deposition.

Descriptors/Keywords: GROWTH, METAMORPHOSIS, MORTALITY, HISTOLOGY, CUTICLE

Record - 964

JOINT ACTION OF BENZOYLPHENYLUREAS IN BINARY MIXTURES AGAINST LARVAE OF THE COTTON LEAFWORM *SPODOPTERA LITTORALIS*

RADWAN H S A; EL-GHAR G E S A; EL-BERMAWY Z A

PHYTOPARASITICA 15 (4). 1987. 269-276.

Full Journal Title: Phytoparasitica

Language: ENGLISH

ABSTRACT

In preliminary laboratory tests, the joint activity of six benzoylphenylureas (BPUs) was studied by investigating the activity of 90 of their binary mixtures against fourth-instar larvae of the cotton leafworm, *Spodoptera littoralis* (Boisd.), fed for 72 h on 10 ppm BPU-treated castor bean leaves. Experimental mixing ratios were 1:1, 1:4, and 1:9. At 10 ppm, the activity of the six BPUs was divided into two distinct groups. The first included the more active compounds (XRD-473, GR-333, and chlorfluazuron) while the second was composed of the relatively less active ones (diflubenzuron, triflumuron, and Dowco-439). Results of the assay indicated that only 18 of the 90 tested binary mixtures showed potentiation, whereas the majority, 70 mixtures, exhibited additive effects; two interacted antagonistically. Most of the potentiated pairs were at a mixing ratio of 1:9, pairing one strong BPU (at the low ratio) with a weak one (at the high ratio). The mixing ratio of 1:1 resulted in additive effects.

Descriptors/Keywords: XRD-473, GR-333, DOWCO-439, TRIFLUMURON, DIFLUBENZURON, TRIFLUMURON, ANTAGONISM, SYNERGISM, POTENTIATION, ADDITIVE EFFECTS

Record - 965

SOME ASPECTS OF THE ACTION OF DIFLUBENZURON AND TRIFLURON ON FOOD CONSUMPTION GROWTH RATE AND FOOD UTILIZATION BY *SPODOPTERA LITTORALIS* LARVAE

RADWAN H S A; ASSAL O M; ABO-ELGHAR G E; RISKALLAH M R; AHMED M T

J INSECT PHYSIOL 32 (2). 1986. 103-108.

Full Journal Title: Journal of Insect Physiology

Language: ENGLISH

ABSTRACT

Fourth-instar larvae of the cotton leafworm, *Spodoptera littoralis* (Boisd.) were fed on castor-bean leaves treated with the chitin-biosynthesis disrupting agents diflubenzuron and its analogue trifluron. There was a reduction in the consumption of food. Considerable decrease in growth rate was also recorded. The efficiency of converting ingested and digested food into body substances also showed an obvious reduction especially in larvae fed on diflubenzuron-treated leaves. On the other hand, the approximate digestibility coefficient increased considerably in larvae fed on leaves treated with diflubenzuron and trifluron.

Record - 966

SOME BIOCHEMICAL ASPECTS OF CERTAIN CARBOHYDRATES HYDROLYZING ENZYMES IN RELATION TO DIFFERENT INSECTICIDAL TREATMENTS IN THE COTTON LEAFWORM

SPODOPTERA LITTORALIS BOISD. LARVAE

RADWAN H S A; AMMAR I M A; EISA A A; EL-MOHYMEN M R A; FARAG A A; ABDEL-H AFEZ M M

BULL ENTOMOL SOC EGYPT ECON SER 0 (14). 1984-1985 (1986). 311-320.

Full Journal Title: Bulletin of the Entomological Society of Egypt Economic Series

Language: ENGLISH

ABSTRACT

The effect of different insecticidal treatments on the activity of carbohydrate metabolizing enzymes in the haemolymph of 6th instar larvae of *Spodoptera littoralis* was investigated colorimetrically. Repeated selection with all the insecticides tested for five successive generations resulted in varying levels of reduction in amylase activity, while invertase and trehalase showed variable levels of increase in activity by the same treatments except in case of DC-702 treatment where a complete inhibition in activity of both enzymes was recorded. Selection with the three insecticides profenofos, deltamethrin and DC-702 in different sequential systems for three successive generations affect considerably the titre of the tested enzymes. However, it was remarkable that the treatment with DC-702 alone or in sequential system with other chemicals led to considerable level of reduction in the activity of the three enzymes under investigation. The explanation of the obtained data in view of the mode of action of the IGR, diflubenzuron was discussed.

Descriptors/Keywords: AMYLASE, INVERTASE, TREHALASE, PROFENOFOS, DELTAMETHRIN, DC-702, DIFLUBENZURON

Record - 967

REPRODUCTIVE INHIBITION ACTIVITY OF CERTAIN SYNTHETIC PYRETHROIDS AND INSECT GROWTH REGULATORS AGAINST THE COTTON LEAFWORM SPODOPTERA LITTORALIS

RADWAN H S A; ASSAL O M; SAMY M E

Z ANGEW ENTOMOL 97 (2). 1984. 130-133.

Full Journal Title: Zeitschrift fuer Angewandte Entomologie

Language: ENGLISH

ABSTRACT

The effects of exposure to sublethal concentrations of 4 synthetic pyrethroids and 2 insect growth regulators [IGR] as residue film, on *S. littoralis* females longevity, fecundity and egg viability were studied. At concentrations ranging 10-200 ppm, females treated with both groups lived significantly shorter than did control females. Meothrin was the most toxic compound in this respect whereas diflubenzuron was considerably the least. In general, the synthetic pyrethroids resulted in drastically high reproductive inhibition where at a lower concentration of 10 ppm 59-100% reduction in fecundity was achieved vs. 13-16% for the tested IGR. However, at the higher concentration of 200 ppm, all synthetic pyrethroids and the standards in addition to Trifluron resulted in 100% reproductive inhibition activity. Adults exposed to sublethal concentrations of cypermethrin, Decamethrin and trifluron produced eggs with no hatch whereas with Meothrin, methomyl and diflubenzuron egg hatchability was greatly reduced.

Descriptors/Keywords: MEOTHRIN, DIFLUBENZURON, CYPERMETHRIN, DECAMETHRIN, TRIFLURON, METHOMYL, LONGEVITY, FECUNDITY

Record - 968

OVICIDAL ACTION POTENTIATION OF SYNTHETIC PYRETHROIDS BY INSECT GROWTH REGULATORS AGAINST THE COTTON LEAF WORM SPODOPTERA LITTORALIS BOISD

RADWAN H S A; ASSAL O M; SAMY M A; RISKALLAH M R

BULL ENTOMOL SOC EGYPT ECON SER 0 (14). 1984-1985 (1986). 275-284.

Full Journal Title: Bulletin of the Entomological Society of Egypt Economic Series

Language: ENGLISH

ABSTRACT

Three synthetic pyrethroid compounds were tested in simultaneous admixtures for their joint action as ovicides with two insect growth regulators (IGRs) at five insecticide-IGR mixing ratios against 1 day old eggs of cotton leafworm, *Spodoptera littoralis* (Boisd.) of the tested IGR, markedly reduced the ovicidal action of Fenvalerate at all tested mixing ratios and resulted in remarkable antagonism. Among other tested pyrethroids that showed synergism in ovicidal action when combined with the insect growth regulators are Deltamethrin, and Cypermethrin. The ovicidal action of Deltamethrin, mixed at different ratios with Diflubenzuron and Trifluron, respectively, was 3-11 and 3-14 times more than that of Deltamethrin alone. Similar trend but with less magnitude was observed for combinations of both IGRs with Cypermethrin. Also, it was evident that, an increase in the ratio of the IGR to pyrethroid insecticide, generally provided a corresponding increase of ovicidal potentiation. However, Trifluron was considered more efficient in this respect, despite that Diflubenzuron alone have relatively higher innate ovicidal action. The marked synergistic ovicidal activity of a number of pyrethroids/IGRs mixtures evaluated in this study, suggest that combinations of this type may have commercial significant, besides adding one more dimension to our informations on the ovicidal action.

Descriptors/Keywords: COTTON PEST, INSECTICIDE, SYNERGISM, DELTAMETHRIN, CYPERMETHRIN, DIFLUBENZURON, TRIFLURON

Record - 969

DEVELOPMENT RETARDATION AND INHIBITION OF ADULT EMERGENCE IN COTTON WHITEFLY *BEMISIA TABACI* FOLLOWING IMMATURE STAGES TREATMENTS WITH TWO MOLT INHIBITORS

RADWAN H S A; AMMAR I M A; EISA A A; ASSAL O M; OMAR H I H

BULL ENTOMOL SOC EGYPT ECON SER 0 (13). 1982-1983 (1985). 175-182.

Full Journal Title: Bulletin of the Entomological Society of Egypt Economic Series

Language: ENGLISH

ABSTRACT

In laboratory tests, the delayed effects of two molt inhibitors on some biological aspects of whitefly *Bemisia tabaci* (Genn.) were studied when different immature stages infesting eggplant seedlings were treated with the tested compounds at concentrations ranging from 50 to 800 ppm. Triflumuron was more active laterally than Diflubenzuron on whitefly life stages. Larval treatments revealed that both compounds reduced remarkably larval survival and that the 3rd instar larvae were more susceptible in this respect. Also, a slight retardation in pupal duration was achieved laterally following larval or/and pupal treatments and such prolongation was mostly directly related to the concentration of the IGR, not to the tested instar. Maturation (development to adults) was remarkably inhibited and adult eclosion was dependent on the concentration of the applied compound as well as on the immature stage treated. Triflumuron reduced considerably adult eclosion more than Diflubenzuron particularly at higher concentrations. Also, adult eclosion was less for survivors resulted from the 3rd instar larvae treatments.

Descriptors/Keywords: EGGPLANT, TRIFLUMURON, DIFLUBENZURON, SUSCEPTIBILITY, ECLOSION, INHIBITION

Record - 970

THE EFFECT OF VARIOUS ADJUVANTS ON THE INSECTICIDAL ACTIVITY OF DIFLUBENZURON AGAINST THE CABBAGE APHID *BREVICORYNE BRASSICAE*

RADWAN, H S A; MESBAH H A; ABDEL-FATTAH M S; ABD EL-MOHYMEN M R; HASSAN N A
Z ANGEW ENTOMOL 94 (4). 1982. 420-423.

Full Journal Title: Zeitschrift fuer Angewandte Entomologie

Language: ENGLISH

ABSTRACT

The 6 adjuvants when tested alone revealed remarkable toxicity against aphids. eggplant exhibited the highest

efficacy. Nestapon, Span 29 and Hamadol OD/600 were slightly less effective. Especrin and Tween 20 were ineffective. Combinations of diflubenzuron and adjuvants at the rates evaluated gave varied results. Only combinations of diflubenzuron/Especrin showed significant synergistic action. Combinations of diflubenzuron/adjuvants such as Nestapon and Tween 20 exhibited highly pronounced antagonism. The other combinations were ineffective.

Descriptors/Keywords: FORMULATIONS, ANTAGONIST, SYNERGIST, NESTAPON, SPAN 20, HAMADOL, OD-600, ESPECRIN, TWEEN 20, TOXICITY

Record - 971

RADWAN, H. S. AND S. M. ABO-KORAH. 1979. POPULATION DYNAMICS OF SOIL INHABITING MITES IN CUCUMBER TREATED WITH GRANULAR INSECT GROWTH REGULATORS. EXPERIMENTIA 35(11): 1485-1487.

Record - 972

REPRODUCTIVE PERFORMANCE OF SPODOPTERA-LITTORALIS TREATED TOPICALLY WITH SUBLETHAL DOSES OF AN ANTI MOLTING INSECT GROWTH REGULATOR DIMILIN

RADWAN H S A; ABO-ELGHAR M R; AMMAR I M A

PLANT PROT. DEP., FAC. AGRIC., SHEBIN EL KOM, EGYPT.

Z ANGEW ENTOMOL 86 (4). 1978. 414-419.

Full Journal Title: Zeitschrift fuer Angewandte Entomologie

Language: ENGLISH

ABSTRACT

Inhibition of reproduction in the cotton leafworm *S. littoralis* (Boisd.) with the antimolting compound, Dimilin (1-[4-chlorophenyl]-3[-2,6-difluorobenzoyl] urea) was investigated by larval treatment. Dosage - mortality response was sublethal at 0.01 and 0.05 $\mu\text{g/larva}$ when applied topically to the 4th instar larvae whereas 0.1 $\mu\text{g/larva}$ produced absolute latent larval mortality. Exposing the 4th instar larvae to sublethal dosages of 0.05 and 0.01 $\mu\text{g/larva}$ for 3 generations induced positive cumulative increase in larval susceptibility to the compound. Also, larval duration was prolonged significantly more than untreated check. A decrease in pupation took place in both treatments but no effect on pupal duration or pupal weight was observed. The lower sublethal dosage (0.01 $\mu\text{g/larva}$) induced pupal malformation as well as in the corresponding emerged adults. Despite prolonged pre-oviposition period adult longevity was significantly shortened. A sterilizing effect caused reduction in egg production as well as egg viability. Sublethal dosages of Dimilin suppressed cotton leafworm population > 99%.

Descriptors/Keywords: MORTALITY, EGG PRODUCTION, EGG VIABILITY, ADULT LONGEVITY, PUPAL WEIGHT

Record - 973

EFFECT OF CHITIN INHIBITORS ON RICE WEEVIL SITOPHILUS ORYZAE

RAJASEKARAN B; KUMARASWAMI T

REGUPATHY, A. AND S. JAYARAJ (ED.). BEHAVIOURAL AND PHYSIOLOGICAL APPROACHES IN PEST MANAGEMENT; MEETING, COIMBATORE, MADRAS, INDIA, JUNE 21-23, 1984. XVIV++218P. TAMIL NADU AGRICULTURAL UNIVERSITY: COIMBATORE, MADRAS, INDIA. ILLUS. PAPER. 0 (0). 1985. 179-180.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: DIFLUBENZURON, TRIFLUMURON, INSECT GROWTH REGULATOR

Record - 974

EFFECT OF DIFLUBENZURON ON THE PRODUCTIVITY OF THE KHAPRA BEETLE
TROGODERMA GRANARIUM

RAJENDRAN S; SHIVARAMAIAH H M

ENTOMOL EXP APPL 33 (1). 1983. 15-19.

Full Journal Title: Entomologia Experimentalis et Applicata

Language: ENGLISH

ABSTRACT

The productivity of adults of *T. granarium* Everts [a pest of stored products] that had been exposed as 3-day-old larvae to 0.8, 1.6 and 12.8 mg a.i. [active ingredient] (diflubenzuron)/kg diet was adversely affected. When 7-day-old larvae were exposed, the [adult] productivity was reduced only at the highest concentration. Diflubenzuron had little influence on the [adult] productivity of the survivors exposed as 14-day-old larvae. The highest dose of 12.8 mg a.i./kg diet caused 94, 80 and 76% mortality, respectively, in 3-, 7- and 14-day-old larval treatments. Adult eclosion was not affected.

Descriptors/Keywords: MORTALITY, EGG HATCH, FECUNDITY, ECLOSION, LARVAL EXPOSURE

Record - 975

OVICIDAL ACTION OF INSECTICIDE MOLT INHIBITOR AND FUNGICIDES ON THE EGGS
OF RICE LEAF FOLDER AND STEM BORER

RAJU N; GOPALAN M; BALASUBRAMANIAN G

INDIAN J PLANT PROT 18 (1). 1990. 5-10.

Full Journal Title: Indian Journal of Plant Protection

Language: ENGLISH

ABSTRACT

Sprays of Cypermethrin and fenvalerate @ 0.01%, deltamethrin and permethrin @ 0.00125% resulted 90.0, 90.5, 90.2 per cent mortality of eggs of leaf folder. Phosphomidon 0.045%, quinalphos and monocrotophos 0.05% resulted in 88.9% mortality as against 83.4, 83.3, 80.9, 79.5 and 70.7% mortality respectively in captafol 0.03%, mancozeb 0.15%, edifenphos 0.1%, carbendazim 0.1% and diflubenzuron 200 ppm treatments. Phosphomidon 0.045%, quinalphos 0.05%, fenthion 0.01%, malathion 0.01% and chlorpyrifos 0.04% recorded 84 to 86.7 per cent mortality of eggs of stem borer. A negative correlation was known to exist between the age of eggs and per cent mortality of eggs of stem borer due to insecticides and when the age of eggs increased by one day, their susceptibility decreased by 3.9 per cent.

Descriptors/Keywords: CYPERMETHRIN, FENVALERATE, DELTAMETHRIN, PERMETHRIN, PHOSPHAMIDON, QUINALPHOS, MONOCROTOPHOS, CAPTAFOL, MANCOZEB, DIFLUBENZURON, EDIFENPHOS, CARBENDAZIM

Record - 976

FIXING THE OPTIMUM TIME OF APPLICATION OF CHITIN INHIBITORS AGAINST PADDY
LEAF FOLDER CNAPHALOCROCIS MEDINALIS GUENEE

RAO A S; KUMARASWAMY T; BALASUBRAMANIAN M

INDIAN J PLANT PROT 15 (2). 1987. 176-179.

Full Journal Title: Indian Journal of Plant Protection

Language: ENGLISH

ABSTRACT

Descriptors/Keywords: DIFLUBENZURON, TRIFLUMURON, BUPROFEZIN, INSECTICIDE

Record - 977

EFFECT OF DIFLUBENZURON DIMILIN ON THE FEEDING BEHAVIOR OF
CNAPHALOCROCIS MEDINALIS GUENEE PYRALIDAE LEPIDOPTERA

RAO A S; KUMARASWAMY T; BALASUBRAMANIAN M

J RES APAU (ANDHRA PRADESH AGRIC UNIV) 15 (2). 1987. 119-123.

Full Journal Title: Journal of Research APAU (Andhra Pradesh Agricultural University)

Language: ENGLISH

ABSTRACT

The feeding behaviour of various instars of rice leaf folder, *Cnaphalocrocis medinalis* Guenee after application of diflubenzuron (Dimilin) was studied. The moult inhibitor was applied by three methods viz., ingestion, topical application and larval dip. In the earlier instars i.e., second, third and fourth there is an initial reduction, then gradual increase up to certain concentration and then gradual decrease in food consumption in response to increase in concentration. In contrast to this in the fifth instar negative relation between the food consumption and concentration is seen. Among the three methods of application larval dip is more effective than topical application and ingestion, as expressed in terms of ID50 values.

Descriptors/Keywords: MOLT INHIBITOR, INGESTION, TOPICAL APPLICATION, LARVAL DIP

Record - 978

GROWTH REGULATORY ACTIVITY OF DIMILIN AGAINST MESOCYCLOPS
THERMOCYCLOPOIDES

RAO D R; PAUL G

CURR SCI (BANGALORE) 57 (7). 1988. 399-400.

Full Journal Title: Current Science (Bangalore)

Language: ENGLISH

Descriptors/Keywords: DRACUNCULUS-MEDINENSIS, HUMAN, EPIZOOTIOLOGY,
INTERMEDIATE HOST CONTROL, PESTICIDE, PESTS, FECUNDITY, MORPHOLOGY

Record - 979

RAO, G. D. J. P. AND G. P. V. REDDY. 1984. THE EFFECT OF DIFLUBENZURON AGAINST CASTOR SEMILOOPER. THE ANDHRA AG. JOURNAL. JULY/SEPT 1984 31(3): 196-200.

Record - 980

EFFECT OF DIFLUBENZURON TREATMENT ON CHITIN DEPOSITION IN THE WINGS OF
SCHISTOCERCA GREGARIA FORSKAL

RAO P A; MEHROTRA K N

INDIAN J ENTOMOL 49 (1). 1987 (1988). 76-80.

Full Journal Title: Indian Journal of Entomology

Language: ENGLISH

ABSTRACT

Chitin content in the wings of adult *Schistocerca gregaria* Forskal was estimated from time after moulting by injecting diflubenzuron in 2 to 3 day old 5th instar hoppers. Diflubenzuron treatment resulted in significant reduction in chitin content in the wings of desert locust. Chitin content was estimated to be 9.00 \pm 0.41 mg per set of four wings in the deformed adult males obtained from diflubenzuron treated hoppers while in normal adult males it was 12.13 \pm 0.63 mg at 15 days after moulting. In case of deformed adult females it was 11.13 \pm 0.25 mg and in normal adult females it was 14.88 \pm 0.48 mg per set of four wings at 14 days after moulting. Percentage wise also the chitin content was found to be significantly reduced in the deformed adults obtained from diflubenzuron treated hoppers.

Descriptors/Keywords: INSECTICIDE

Record - 981

LETHAL EFFECTS OF 5 MOLT INHIBITORS FED TO THE WESTERN SPRUCE BUDWORM
CHORISTONEURA OCCIDENTALIS LEPIDOPTERA TORTRICIDAE AND THE DOUGLAS-FIR
TUSSOCK MOTH ORGYIA PSEUDOTSUGATA LEPIDOPTERA LYMANTRIIDAE

RAPPAPORT N G; ROBERTSON J L

Z ANGEW ENTOMOL 91 (5). 1981. 459-463.

Full Journal Title: Zeitschrift fuer Angewandte Entomologie

Language: ENGLISH

ABSTRACT

Five insect molt inhibitors (MI) were mixed with artificial diet and fed to 3rd and 6th stage western spruce budworm (*C. occidentalis*) larvae and 2nd stage Douglas-fir tussock moth (*O. pseudotsugata*) larvae. Tussock moth larvae were more susceptible than western spruce budworm larvae to these MI. SIR 6874 was the most toxic to 3rd and 6th stage western spruce budworm and diflubenzuron the least toxic. TH 75331 and EL-494 both showed substantial activity against this insect, while SIR 8514 was relatively less active but still at least 3 times as toxic as diflubenzuron. Except for EL-494, there were no large differences in toxicity of these compounds to 2nd stage tussock moth larvae; EL-494 was 30-90 times less toxic than the others at the LC50. The other 4 MI caused at least 50% mortality of 2nd stage tussock moth which were fed a diet containing < 0.1 ppm of the MI.

Descriptors/Keywords: DIET, DIFLUBENZURON, SIR-6874, SIR-8514, TH-75331, EL-494, MORTALITY

Record - 982

RASKE, A. G. AND A. RETNAKARAN. 1987. THE EFFECTIVENESS OF DIFLUBENZURON AND FENITROTHION AGAINST THE EASTERN HEMLOCK LOOPER, LAMBDINA FISCELLARIA, IN NEWFOUNDLAND IN 1986. INFORMATION REPORT N-X CAN. FORESTRY SVC., NEWFOUNDLAND FOREST RESEARCH CENTRE. 1987 (263) PP 1-30.

Record - 983

RASKE, A. G. 1986. THE EFFECTIVENESS OF BACILLUS THURINGIENSIS, DIMILIN, SUMITHION AND MATACIL AGAINST THE HEMLOCK LOOPER, LAMBDINA FISCELLARIA FISCELLARIA. IN NEW FOUNDLAND IN 1985/ BY A. G. RASKE...ET AL. XI, 56P. ST. JOHN'S NEWFOUNDLAND: CANADIAN FORESTRY SERVICE. NEWFOUNDLAND FORESTRY CTR. 1986 INFORMATION REPORT. NEWFOUNDLAND FOREST RESEARCH CENTER N-X-238.

Record - 984

RASN, G. 1978. STABILITY OF DIFLUBENZURON RESIDUES IN ORANGES IN FROZEN STORAGE. UNPUBLISHED STUDY RECEIVED APR. 30, 1981, UNDER 148-1268; SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 985

RATHBURN, C. B. AND A. H. BOIKE JR. 1975. LABORATORY AND SMALL PLOT FIELD TESTS OF ALTOSID AND DIMILIN FOR THE CONTROL OF AEDES TAENIORHYNCHUS AND CULEX NIGRIPALPUS LARVAE. MOSQ. NEWS 35 (4): 540-546.

Record - 986

RAVEN, C. 1986. REBUTTAL OF ECOLOGICAL EFFECTS IN DIFLUBENZURON REGISTRATION STANDARD. REPORT NO. 56683/02/1986. UNPUBLISHED STUDY PREPARED BY DUPHAR B. V. 87. PAGES.

Record - 987

RAVEN, C. 1986. SUPPOSED DATA GAPS FOR DIMILIN IN FORESTRY. REPORT NO. 56683/03/1986. UNPUBLISHED STUDY PREPARED BY DUPHAR B. V. 9 PAGES.

Record - 988

THE NATURAL ENEMIES OF THE WOOLLY APPLE APHID ERIOSOMA LANIGERUM
HOMOPTERA APHIDIDAE AND THEIR SUSCEPTIBILITY TO DIFLUBENZURON

RAVENSBERG W J

MEDED FAC LANDBOUWWET RIJKSUNIV GENT 46 (2). 1981. 437-442.

Full Journal Title: Mededelingen van de Faculteit Landbouwwetenschappen Rijksuniversiteit Gent

Language: ENGLISH

ABSTRACT

A long-term comparison between various experimental schemes of integrated pest management showed in some plots a gradually increasing abundance of woolly apple aphid over several years. Repeated application of diflubenzuron in each season was the only selective treatment applied exclusively to these plots. No difference was established between numbers of various common aphid predators, such as bugs, syrphid larvae and ladybird beetles between plots infested by the woolly aphid. Parasitic *Aphelinus mali* was also common in highly infested plots and laboratory experiments showed its tolerance for diflubenzuron. The only striking feature was the absence of the European earwig, *Forficula auricularia*, in the plots with high aphid numbers. The capacity of this insect to devour the woolly apple aphid was observed in the laboratory and the field. The importance of the earwig as woolly aphid predator and its susceptibility (at an as yet unknown life stage) to diflubenzuron is discussed.

Descriptors/Keywords: APHELINUS-MALI FORFICULA-AURICULARIA, BUG, SYRPHID LARVAE, LADYBIRD BEETLE

Record - 989

INSECT GROWTH REGULATOR DIFLUBENZURON AS A REPRODUCTIVE INHIBITOR IN
POTATO TUBER MOTH PHTHORIMAEA OPERCULELLA ZELLER

REDDY G V P; URS K C D

J INSECT SCI 4 (2). 1991. 155-156.

Language: ENGLISH

ABSTRACT

Reproductive inhibitory effects of diflubenzuron on final instar larvae of *Phthorimaea operculella* (Zeller) revealed reduction in fecundity of the female and increased sterility when both sexes were treated. Treatment of pupae of both sexes showed maximum effect on fecundity and egg hatchability and the males were more sensitive than the females. Pupae were more susceptible to diflubenzuron than the larvae.

Descriptors/Keywords: POTATO PEST, FECUNDITY, REDUCTION, EGG HATCHABILITY, SEX DIFFERENCES, AGE FACTORS

Record - 990

EFFECT OF DIFLUBENZURON ON THE EGG AND LARVAL-PUPAL PARASITES OF
HENOSEPILOCHNA VIGINTIOCTOPUNCTATA FABRICIUS

REDDY K V S; RAO P K

ENTOMON 12 (3). 1987. 211-214.

Full Journal Title: Entomon

Language: ENGLISH

ABSTRACT

The effect of diflubenzuron on the egg and larval-pupal parasites due to contact toxicity on the egg and larval stages of *Henosepilachna vigintioctopunctata* (Coccinellidae: Coleoptera) was studied. The per cent emergence of parasite *Tetrastichus ovulorum* (Ferriere) from the treated parasitised eggs ranged from 97.00 to 100.00 while the mean number of *Pediobius foveolatus* (Crawford) emerged from treated parasitised larvae and pupae were 89.7 and 62.6 as against 88.0 and 65.0 in control respectively indicating no adverse effect of diflubenzuron due to contact action on the parasite emergence.

Descriptors/Keywords: TETRASTICHUS-OVULORUM, PEDIIBIUS-FOVEOLATUS, PARASITE EMERGENCE, CONTACT, TOXICITY, INSECTICIDE

Record - 991

ECDYSTEROID TITERS AND MOLTING ABERRATIONS IN LAST STAGE ONCOPELTUS NYMPHS TREATED WITH INSECT GROWTH REGULATORS

REDFERN R E; KELLY T J; BORKOVEC A B; HAYES D K

PESTIC BIOCHEM PHYSIOL 18 (3). 1982. 351-356.

Full Journal Title: Pesticide Biochemistry and Physiology

Language: ENGLISH

ABSTRACT

The ecdysteroid titers of insect growth regulator (IGR)-treated and untreated large milkweed bug nymphs, *O. fasciatus* (Dallas) (Heteroptera: Lygaeidae), were determined by radioimmunoassay. All of the IGRs tested affected the ecdysteroid levels and the ecdysis of both sexes in some way. AI3-63604, a juvenile hormone mimic, accelerated ecdysteroid production and its subsequent decline, shortened the stadium, and induced a supernumerary nymphal molt. Diflubenzuron had no effect on the onset of ecdysteroid production but slightly retarded the decline in ecdysteroid titers before adult ecdysis, and the ecdysis was incomplete. Ecdysteroid production was delayed and erratic in nymphs treated with azadirachtin and AI3-63967, but the effect on ecdysis was different for each compound. Azadirachtin caused incomplete adult ecdysis: AI3-63967 completely prevented any attempts at ecdysis. The large peak of ecdysteroid activity associated with apolysis was absent in starved insects, and they made no attempt to ecdyse.

Descriptors/Keywords: ONCOPELTUS-FASCIATUS, ECDYSIS, JUVENILE HORMONE MIMIC, A-13-63967, A-13-63604, DIFLUBENZURON, AZADIRACHTIN, APOLYSIS, STARVATION, SEX DIFFERENCE, RADIO IMMUNOASSAY

Record - 992

LARGE MILKWEED BUG ONCOPELTUS FASCIATUS EFFECTS OF DIFLUBENZURON AND ITS ANALOGS ON REPRODUCTION

REDFERN R E; DEMILO A B; BORKOVEC A B

J ECON ENTOMOL 73 (5). 1980. 682-683.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Adult male or female *O. fasciatus* (Dallas) did not reproduce when they were topically treated with 1 .mu.g of diflubenzuron or penfluron. The same dose of AI 3-63220 (N-[[[(4-bromophenyl)amino]carbonyl]-2,6-difluorobenzamide) prevented reproduction by treated males or reduced by 90% the hatch of eggs laid by treated females. Of the 3 compounds tested the most active was penfluron: in males, a dose of 0.01 .mu.g/insect prevented transfer of sperm; in females, this dose did not affect egg hatch but prevented maturation of nymphs. In confinement, treated males transferred some penfluron to untreated

females, but the fertility of these females was lowered only when the initial dosage was 1-10 .mu.g./male..

Descriptors/Keywords: AI-3-63220 N-4 BROMOPHENYLAMINOCARBONYL-2 6-DIFLUORO BENZAMIDE, PENFLURON, EGG HATCH, SPERM TRANSFER, TOPICAL APPLICATION, NYMPH MATURATION, FERTILITY

Record - 993

FECAL ELIMINATION OF DIFLUBENZURON BY THE SOYBEAN LOOPER
PSEUDOPPLUSIA INCLUDENS

REED T; BASS M H

J GA ENTOMOL SOC 16 (1). 1981. 91-95.

Full Journal Title: Journal of the Georgia Entomological Society

Language: ENGLISH

ABSTRACT

Sixth-instar *P. includens* (Walker) larvae were allowed 24 h to consume, digest and eliminate cubes of diet medium injected with increasing amounts of diflubenzuron. Bioassay and high pressure liquid chromatography indicated that during the first 24 h after feeding, .apprx. 1/2-2/3 of the dosages were eliminated in the feces.

Descriptors/Keywords: DIET, HIGH PRESSURE LIQUID CHROMATOGRAPHY

Record - 994

LARVAL AND POST LARVAL EFFECTS OF DIFLUBENZURON ON THE SOYBEAN LOOPER
PSEUDOPPLUSIA INCLUDENS

REED T; BASS M H

J ECON ENTOMOL 73 (2). 1980. 332-338.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Dosage-mortality curves were determined for 1st, 3rd, 5th and 6th instars of *P. includens* (Walker) placed on a diet surface-treated with diflubenzuron (DFB) and for 6th instars fed cubes of DFB-injected medium. LD50 values for 5th instars were significantly greater than similar values for 1st and 3rd instars and significantly less than LD50 values for 6th instars. The consumption of DFB-injected medium cubes within 24 h was much less effective than continuous feeding on the surface-treated diet in preventing 6th instars from becoming pupae and adults. Of the 2011 larvae which consumed DFB-treated medium and completed larval development, 51% exhibited postlarval abnormality. The total mean percentage of abnormal prepupae, pupae or adults for DFB-treated groups was 38.1, 7.3 and 12.5. The majority of abnormal prepupae died as prepupal-pupal intermediates. About 1/2 of the abnormal adults failed to escape the silk cocoon spun just before prepupal formation. Larvae fed DFB-treated medium required a significantly greater period of time to reach the prepupal stage than did control larvae.

Descriptors/Keywords: DOSAGE, MORTALITY CURVE, LD-50, POST LARVAL ABNORMALITY, SILK COCOON

Record - 995

EFFECTS OF DIFLUBENZURON ON FOOD CONSUMPTION BY THE SOYBEAN LOOPER
PSEUDOPPLUSIA INCLUDENS

REED T; BASS M H

J ECON ENTOMOL 72 (6). 1979. 912-913.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Larvae of *P. includens* (Walker) that fed continuously from the 5th instar on diflubenzuron-treated medium consumed decreasing amounts of medium as the dosage of diflubenzuron (DFB) applied to the medium surfaces increased. Fifth instars that fed continuously on DFB-treated medium and completed larval development consumed significantly less medium than controls. Soybean loopers that fed on DFB-treated medium beginning at the 6th instar consumed the same amount of medium as controls despite heavy postlarval mortality among the former.

Descriptors/Keywords: POST LARVAL MORTALITY, INSECT GROWTH REGULATOR

Record - 996

EFFICIENCY OF CERTAIN INSECTICIDES INSECT GROWTH INHIBITORS AND THEIR COMBINATIONS AGAINST THE COTTON LEAFWORM LARVAE IN COTTON PLANTATIONS OF EGYPT

REFAEI A F; HEGAZY M A; HUSSEIN N M; EL-HAMAKY M A

INTERNATIONAL SYMPOSIUM ON CROP PROTECTION. MEDED FAC LANDBOUWWET RIJKSUNIV GENT 55 (2 PART B). 1990. 601-608.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: SPODOPTERA-LITTORALIS, THIODICARB, CYFLUTHRIN, METHOPRENE, TRIAZOPHOS, DIFLUBENZURON, TRIFLUMURON, CHLORFLUAZURON

Record - 997

RESPONSE OF THE WESTERN SPRUCE BUDWORM CHORISTONEURA OCCIDENTALIS TO TEMPERATURE AND DOSE OF A VIRUS A GROWTH REGULATOR AND AN ORGANOPHOSPHATE

REICHENBACH N G

ENTOMOL EXP APPL 38 (1). 1985. 57-64.

Full Journal Title: Entomologia Experimentalis et Applicata

Language: ENGLISH

ABSTRACT

Pathogenicity of nuclear polyhedrosis virus (NPV) to western spruce budworm larvae, *C. occidentalis* Freeman, increased as temperature increased. In contrast, at temperature extremes, mortality increased for a specific dose of malathion or diflubenzuron, while at the optimal temperatures (20-25.degree. C), mortality decreased. Malathion was the fastest acting insecticide, followed by diflubenzuron and then NPV. Simulation results considered temperature-dependent developmental rates of the larvae, energy consumption, time to achieve total mortality, and mortality at specified doses of insecticides. Low temperatures provided the greatest reduction in the amount of energy consumed by spruce budworm relative to the energy consumed when no treatment was applied. This was due to both the percent mortality and because total mortality was realized in the larval stage while at the higher temperatures, mortality was not fully realized until the pupal stage.

Descriptors/Keywords: NUCLEAR POLYHEDROSIS VIRUS, MALATHION, DIFLUBENZURON, INSECTICIDE, LARVAE, ENERGY CONSUMPTION

Record - 998

REINERT, H. K. G. S. E. PARKE. 1976. REPORT: STATIC 96-HOUR TOXICITY STUDY OF DIMILIN 1.0% GRANULAR IN BLUEGILL SUNFISH AND RAINBOW TROUT: LABORATORY NO. 6E2035.

UNPUBLISHED STUDY RECEIVED JULY 31, 1978 UNDER 148-1259; PREPARED BY CANNON LABORATORIES, INC. SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 999

REINERT, H. AND G. S. E. PARKE. 1975. REPRODUCTIVE STUDY OF TH-6040 IN BOBWHITE QUAIL AND MALLARD DUCKS: LABORATORY NOS. 5E-6092 AND 5E-6093. UNPUBLISHED STUDY RECEIVED JAN. 12, 1976 UNDER 148-1170. PREPARED BY CANNON LABORATORIES, INC. SUBMITTED BY THOMPSON HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 1000

REINERT H. ET AL. 1975. THE EVALUATION OF TH-6040 IN THREE AVIAN SPECIES. LABORATORY NO. 5E8680 A-C. RECEIVED 1/12/76 UNDER 148-1170.

Record - 1001

EVALUATION OF MITICIDES FOR CONTROL OF PARACALACARUS PODOCARPI ON PODOCARPUS MACROPHYLLUS

REINERT J A

J ECON ENTOMOL 74 (1). 1981. 85-87.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

*P. podocarp*i Keifer is the most important mite pest of *Podocarpus macrophyllus* (Thunb.) D. Don in nursery and landscape culture in Florida [USA]. Miticides (24) were evaluated in 2 experiments for control. Single applications of bromopropylate, cyhexatin, dicofol, dioxathion, fenbutatin-oxide or oxamyl reduced populations below 1 mite per leaf. Two applications, 7 days apart, with carbophenothion, dialifor, diflubenzuron or propargite also reduced mites to < 1 mite per leaf. Mean populations of 361.1 and 314.7 mites per 2-leaf samples were present on the plants before treatments were applied in the 2 experiments.

Descriptors/Keywords: NURSERY LANDSCAPE, BROMO PROPYLATE, CYHEXATIN, DICOFOL, DIOXANTHION, FENBUTATIN OXIDE, OXAMYL, CARBOPHENOTHION, DIALIFOR, DIFLUBENZURON, PROPARGITE, FLORIDA USA

Record - 1002

REISH, D. J., G. G. GEESEY, F. G. WILKES, ET AL. 1983. MARINE AND ESTUARINE POLLUTION. JOURNAL OF THE WATER POLLUTION CONTROL FEDERATION 55(6): 767-787.

Record - 1003

RENNA, C., K. SATYANARAYANA, AND K. SUKUMAR. 1984. ECDYSIAL DISRUPTION BY PENFLURON IN DYSDERCUS CINGULATUS (F.). INTERNATIONAL PEST CONTROL. NOV/DEC 1984 26(6): 154-155. LONDON: MCDONALD PUBLICATIONS.

Record - 1004

EVALUATION OF DIFLUBENZURON AS A CONTROL AGENT FOR HEMLOCK LOOPER
LEPIDOPTERA GEOMETRIDAE

RETNAKARAN A; RASKE A G; WEST R J; LIM K P; SUNDARAM A

J ECON ENTOMOL 81 (6). 1988. 1698-1705.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Diflubenzuron, a benzoylphenyl urea that selectively inhibits chitin synthesis in insect larvae upon

ingestion, was aerially applied on a infestation of hemlock looper, *Lambdina fiscellaria fiscellaria* (Guenee), in a stand of balsam fir, *Abies balsamea* (L.), near Bay D'Espoir, Newfoundland. A single application of 70 g (AI)/in 4.7 liters/ha, applied when 75% of the larvae were in the second instar, resulted in 92% reduction in pupal population, but when the same amount was applied twice, 2 wk apart, both larval and pupal populations were reduced by > 99%. A double application of diflubenzuron at the rate of 70 g (AI)/4.7 liters per hectare is recommended for the effective control of the hemlock looper. Merits of spraying at an earlier stage of insect development to obtain better foliage protection, and the use of lower volume rate to increase the payload of the aircraft, are discussed.

Descriptors/Keywords: ABIES-BALSAMEA, LAMBDINA-FISCELLARIA-FISCELLARIA, INSECT GROWTH INHIBITOR, CHITIN SYNTHESIS INHIBITOR, LARVAE INSTAR, PUPAE, AGRICULTURE, FOREST PRODUCTS, PESTS, INSECTICIDE

Record - 1005

CONTROL OF THE OAK-LEAF SHREDDER *CROESIA SEMIPURPURANA* LEPIDOPTERA
TORTRICIDAE BY AERIAL APPLICATION OF DIFLUBENZURON

RETNAKARAN A; GRANT G G

CAN ENTOMOL 117 (3). 1985. 363-370.

Full Journal Title: Canadian Entomologist

Language: ENGLISH

ABSTRACT

Unlike some tortricids that are refractory to diflubenzuron, the oak-leaf shredder, *C. semipurpurana* (Kearfott), is susceptible to this molt-inhibiting insect growth regulator. Aerial application of 140 g in 4.7 l/ha provides good control of this insect and affords foliage [*Quercus rubra* L.] protection. The success of diflubenzuron was evaluated by sampling larvae and pupae. Monitoring male moths with pheromone traps provided corroborative evidence of a significant decrease in the post-treatment population. The successful assessment by pheromone monitoring here merits its consideration for other control operations in forestry.

Descriptors/Keywords: QUERCUS-RUBRA, INSECT GROWTH REGULATOR, PHEROMONE MONITORING

Record - 1006

RETNAKARAN, A. 1982. NONINVOLVEMENT OF MIXED FUNCTION OXIDASES IN DIMILIN METABOLISM. CAN. FORESTRY SVC. RESEARCH NOTES. VOL 2 (1): 1.

Record - 1007

RETNAKARAN, A. 1981. TOXICOLOGY AND EFFICACY OF INSECT GROWTH REGULATORS AERIALLY APPLIED AGAINST THE SPRUCE BUDWORM AT HEARST (1978), WAWA (1979) AND THE FRENCH RIVER AREA (1980). REPORT FPM-X-45 FPM INSTITUTE, CANADIAN FORESTRY SERVICE, DEPARTMENT OF THE ENVIRONMENT. SAULT STE. MARIE, ONTARIO.

Record - 1008

POSSIBLE PHYSIOLOGICAL MECHANISMS FOR THE DIFFERENTIAL SUSCEPTIBILITY OF 2 FOREST LEPIDOPTERA *CHORISTONEURA FUMIFERANA* AND *MALACOSOMA DISSTRIA* TO DIFLUBENZURON

RETNAKARAN A; GRANETT J; ROBERTSON J

J INSECT PHYSIOL 26 (6). 1980. 385-390.

Full Journal Title: Journal of Insect Physiology

Language: ENGLISH

ABSTRACT

The physiological mechanisms for the differential susceptibility of insects to the chitin synthesis inhibitor, diflubenzuron, chitin content, chitin synthesis and retention of ingested ¹⁴C-diflubenzuron in 2 forest Lepidoptera were investigated. The spruce budworm, *C. fumiferana*, a refractory species, had less chitin and retained less of the ingested material than the forest tent caterpillar, *M. disstria*, a species highly sensitive to diflubenzuron. No difference in the chitin synthesis pattern during the 6th stadium was observed in the 2 spp. The primary reasons for the increased susceptibility of the forest tent caterpillar to this compound was the increased retention of ingested diflubenzuron and, to a lesser extent, the increased chitin content.

Descriptors/Keywords: CHITIN SYNTHESIS

Record - 1009

RETNAKARAN, A. AND L. SMITH. 1979. ABSENCE FROM MAPLE SAP ACER SACCHARUM OF DIMILIN APPLIED AS A SOIL DRENCH. BI-MONTHLY RESEARCH NOTES. CANADA FOREST SERVICE 35(3): 16-17. OTTAWA.

Record - 1010

CONTROL OF FOREST TENT CATERPILLAR MALACOSOMA DISSTRIA LEPIDOPTERA LASIOCAMPIDAE WITH DIMILIN

RETNAKARAN A; SMITH L; TOMKINS B; GRANETT J

CAN ENTOMOL 111 (7). 1979. 841-846.

Full Journal Title: Canadian Entomologist

Language: ENGLISH

ABSTRACT

Dimilin (25% wettable powder) was mixed in water and sprayed from a Grumman Agcat aircraft equipped with 4 micronair units at the rate of 70 g (active ingredients) / 4.67 L/ha (1 oz/0.5 USA gal/acre) on 2 stands of trembling aspen, *Populus tremuloides* Michx., heavily infested with forest tent caterpillar, *M. disstria* Huebner. Material was applied when the insects were in the 1st and 2nd instars and the trees were starting to flush. Spray deposit analysis using a dye, Rhodamine-B, in the spray mix and spray plates in the plots indicated that conditions for spraying in the morning were better than those in the evening. Total control of the forest tent caterpillar with very little defoliation of the trees was achieved.

Descriptors/Keywords: POPULUS-TREMULOIDES, RHODAMINE B, DEFOLIATION

Record - 1011

EFFECT OF DIFLUBENZURON ON 4 SPECIES OF MOSQUITOES DIPTERA CULICIDAE

RETTICH F

ACTA ENTOMOL BOHEMOSLOV 75 (5). 1978. 312-318.

Full Journal Title: Acta Entomologica Bohemoslovaca

Language: ENGLISH

Subfile: BA (Biological Abstracts)

A high biological efficacy of diflubenzuron was detected in laboratory and field conditions on *Aedes* and *Culex* mosquito larvae. The LC₅₀ and LC₉₀ values determined in laboratory conditions for 3rd and 4th instars of *A. cantans* (Meig.) fluctuated between 0.0002-0.0004 and 0.001-0.0026 ppm, respectively; for the 3rd and 4th instars of *C. pipiens pipiens* L. between 0.0001-0.0003 and 0.0004-0.0017 ppm, respectively; and for all instars of *C. p. molestus* Forsk. between 0.0002-0.0007 and 0.001-0.0024 ppm, respectively. LC₅₀ and LC₉₀ for the 4th instar of *A. vexans* (Meig.) were 0.0005 and 0.0009 ppm, respectively. In field conditions the 0.06 ppm dose applied as preseasonal treatment of breeding places was sufficient to inhibit the development of *A. cantans* larvae. The 0.01 ppm doses applied for 1st, 2nd

and 4th instars were sufficient to inhibit development of this species in floodplain forest. The 0.01 ppm dose caused an almost total inhibition of *A. vexans* larvae in artificially irrigated meadows.

Descriptors/Keywords: AEDES-CANTANS, CULEX-PIPIENS-PIPIENS,
CULEX-PIPIENS-MOLESTUS AEDES-VEXANS, FLOODPLAIN, FOREST, IRRIGATED MEADOWS

Record - 1012

THE CUTICLE GROWTH AND MOLTING IN INSECTS THE ESSENTIAL BACKGROUND TO THE
ACTION OF ACYLUREA INSECTICIDES

REYNOLDS S E

PESTIC SCI 20 (2). 1987. 131-146.

Full Journal Title: Pesticide Science

Language: ENGLISH

ABSTRACT

The functions, structure and biochemistry of the insect cuticle in relation to the moulting cycle are briefly reviewed as an introduction to the actions of insecticides that act on the cuticle, particularly acylureas. The symptoms of poisoning with diflubenzuron (DFB) and other acylureas are consistent with ultra-structural and biochemical evidence that these insecticides inhibit the formation of chitin microfibrils in newly synthesised cuticle. It is probable that DFB acts at a late stage in chitin biosynthesis, perhaps inhibiting chitin synthase (CS) itself. However, the results of studies using cell-free preparations of CS have not, on the whole, supported this hypothesis. A number of alternative suggestions as to the mode of action of DFB are reviewed. Among the most attractive of these is the possibility that DFB may inhibit the transmembrane transport of chitin synthesis precursors from their site of production within the epidermal cells to the site of the final polycondensation reaction, presumably at the apical membrane of the epidermal microvilli.

Descriptors/Keywords: DIFLUBENZURON, CHITIN SYNTHASE, CHITIN MEMBRANE, PESTS,
INSECTICIDE

Record - 1013

SUSCEPTIBILITY OF THE COFFEE BERRY BORER HYPOTHENEMUS HAMPEI TO VARIOUS
INSECTICIDAL FORMULATIONS

RHODES L F; MANSINGH A

INSECT SCI APPL 2 (4). 1981 (1982). 227-232.

Full Journal Title: Insect Science and its Application

Language: ENGLISH

ABSTRACT

The LC₅₀ values (percent active ingredient in parentheses) for 34 formulations of 29 insecticides, obtained by dipping green berries (GWB) infested with adult *H. hampei*, were as follows: thiodan EC [emulsifiable concentrate] 35 (0.0003) > Perfekthion (0.0004) > Carbicron (0.00044) > Decis (0.0005) > Actellic (0.0008) > Basudin (0.0009) > Belmark and Ciodrin (0.0012) > Thiodan EC 3 (0.0013) > malathion (0.0014) > Folimat and Bidrin (0.002) > aldicarb and lindane (0.003) > Nexion > tiovel EC 3 > Dursban (0.0046-0.006) > supona > methonyl > Kelthane (0.011-0.012) > chlordane > aldrin > Dimilin > chlorfenvinphos > Phosdrin > sevin > methoxychlor > dieldrin (0.016-0.025) > Nexagan (0.034) > Azodrin (0.04) fenitrothion (0.07) > bimarit (0.14) > chlorpyrifos (0.39) > Gardona (0.96). The order of toxicity remained the same for borers in the pulp (GP) or endosperm (GE) of green berries or endosperm of red (RE) berries, though the LC₅₀ of each formulation of the same or different insecticides varied significantly. The respective LC₅₀ values for the 4 leading, and the rest of the formulations were about 7-21- and 2-6-fold higher in GWB than GP, 9-23 and 2-5-fold higher in GE than GP, 1-2.3- and 1-3-fold higher in RE than GE, and 12-25 and 3-37-fold higher in RE than GWB. The practical significance of the results is discussed.

Descriptors/Keywords: COFFEE, THIODAN, PERFEKTHION, CARBICRON, DECIS, ACTELIC, BASUDIN, BELMARK, CIODRIN, THIODAN, MALATHION, FOLIMAT, BIDRIN, ALDICARB, LINDANE, NEXION, TIOVEL, DURSBAN, SUPONA, METHOMYL, KELTHANE, CHLORDANE, ALDRIN, DIMILIN, CHLORFENVINPHOS, PHOSDRIN, SEVIN, METHOXYCHLOR, DIELDRIN, NEXAGEN, AZODRIN, FENITROTHION, BIMARIT, CHLORPYRIFOS, GARDONA, LC-50

Record - 1014

RIBBECK, R., W. NETZSCH, P. MULLER,, R. REINHOLD AND T. HIEPE. 1987. USE OF PASSAGE OF CHITIN BIOSYNTHESIS INHIBITOR DIFLUBENZURON (DIMILIN WP25) AGAINST LARVAE OF MUSCA DOMESTICA IN PIG FECES. ARCHIV FOR EXPERIMENTELLE VETERINARMEDIZIN. 41(3): 407-419.

Record - 1015

EVALUATION OF DIFLUBENZURON AGAINST EGG AND LARVAL STAGES OF THE NANTUCKET PINE TIP MOTH RHYACIONIA FRUSTRANA

RICHMOND J A; CUNNINGHAM P A

J GA ENTOMOL SOC 18 (2). 1983. 280-284.

Full Journal Title: Journal of the Georgia Entomological Society

Language: ENGLISH

ABSTRACT

Six concentrations of diflubenzuron were tested against the egg and larval stages of the Nantucket pine tip moth, *R. frustrana* (Comstock). Ovicidal and larvicidal activity were observed. Eggs treated with 10 ppm had significantly lower hatch than those untreated. Larvae that hatched from treated eggs molted to 2nd and 3rd stage larvae on artificial diet, but survival was not dose-dependent over the range of concentrations tested. Pupation from 1st and 4th stage larvae placed on diet containing diflubenzuron was relatively low and highly variable among concentrations. Morphogenetic abnormalities were observed among 4th stage larvae placed on treated diet. Treating pine seedlings with 10 ppm of diflubenzuron significantly reduced pupation of 1st stage larvae placed on seedlings.

Descriptors/Keywords: PUPATION, MOLT, ECDYSIS, DIET

Record - 1016

MORTALITY AND STERILITY OF SOUTHERN PINE BEETLES TREATED WITH CHEMO STERILANTS AND GROWTH REGULATORS

RICHMOND J A; DEMILO A B; THOMAS H A; BORKOVEC A B

J GA ENTOMOL SOC 13 (3). 1978 237-240.

Full Journal Title: Journal of the Georgia Entomological Society

Language: ENGLISH

ABSTRACT

Male and female southern pine beetles, *Dendroctonus frontalis* Zimmerman, were sterilized by topical application of the chemosterilants tepa, thiotepa, bisazir, or hempa. Insect growth inhibitors diflubenzuron and penfluron sterilized females better than males. At dosages below LD50, all compounds reduced numbers of galleries constructed and reproduction.

Descriptors/Keywords: DENDROCTONUS-FRONTALIS, TEPA, THIOTEPA, BISAZIR, HEMPA, DIFLUBENZURON, PENFLURON, TOPICAL APPLICATION, MALE, FEMALE, REDUCED GALLERIES REDUCED REPRODUCTION

Record -1017

IMPACT OF FENVALERATE AND DIFLUBENZURON ON TARGET AND NONTARGET ARTHROPOD SPECIES ON BARTLETT PEARS IN NORTHERN CALIFORNIA USA

RIEDL H; HOYING S A

J ECON ENTOMOL 73 (1). 1980. 117-122.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

The synthetic pyrethroid fenvalerate provided commercial control of the pear psylla, *Psylla pyricola* Foerster, during the prebloom as well as the foliar period. Two cover sprays at 6.7 and 13.5 g AI[active ingredient]/100 l gave seasonal control. This compound was equally effective against the codling moth, *Laspeyresia pomonella* (L.), at rates ranging from 3.4-13.5 g AI/100 l. Even a single well-timed 1st cover spray gave acceptable seasonal protection. All foliar applications of fenvalerate resulted in increased populations of spider mites, primarily the twospotted spider mite, *Tetranychus urticae* Koch, even though higher dosages were initially acaricidal. Peak levels of spider mites during the summer were correlated with the amount of foliage present at the time of pyrethroid application. Regulation of spider mites by natural enemies [*Typhlodromus occidentalis* Nesbitt] became decreasingly poorer as less pesticide-free leaf surface was available. Fenvalerate at 13.5 g AI/100 l temporarily suppressed the pear rust mite, *Epitrimerus pyri* (Nalepa) and did not induce outbreaks of this species. Diflubenzuron was weaker for codling moth, had no direct effect on pear psylla, but did not induce phytophagous mites.

Descriptors/Keywords: PSYLLA-PYRICOLA, LASPEYRESIA-POMONELLA, TETRANYCHUS-URTICAE, TYPHLODROMUS-OCCIDENTALIS, EPITRIMERUS-PYRI, PHYTOPHAGOUS MITES, PREBLOOM, FOLIAR PERIOD, ACARICIDE, SUMMER PESTICIDE

Record - 1018

RIEDL, H. AND S. HOYING. 1978. EFFICACY AND SIDE EFFECTS OF PSYLLA AND CODLING MOTH CONTROL PROGRAMS. SUBMITTER NO. 4780. UNPUBLISHED STUDY RECEIVED FEB. 13, 1979 UNDER 148-EX-26. PREPARED BY UNIV. OF CALIF., BERKELEY, DEPT. OF ENTOMOL. SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 1019

DEVELOPMENTAL INHIBITION OF MED-FLY CERATITIS CAPITATA BY THE INSECT GROWTH REGULATOR DIMILIN

RIZK G A M; SHETA I B; RADWAN H S A

BULL ENTOMOL SOC EGYPT ECON SER 0 (12). 1980-1981 (1984). 19-24.

Full Journal Title: Bulletin of the Entomological Society of Egypt Economic Series

Language: ENGLISH

ABSTRACT

The med-fly *C. capitata* (Weid) is the principal citrus infesting fruit fly in Egypt. The control of the insect presents a difficult problem to the commercial growers, due to the hazards of currently used insecticides. Trials were made to test the feasibility of using the IGR [insect growth regulator] Dimilin (N-(4-chlorophenyl)-N (2,6-difluorobenzoyl) urea), against eggs, larvae and pupae of *C. capitata*. Dimilin partially inhibits egg hatchability. Highest scores (over 95% unhatchability) were obtained at an 8 and 16 ug/100 eggs. The IGR offered promising activity as a food additive for larvae when used as initial feeding. It prevented pupal formation and interfered with adult emergence at 1, 2, 4 and 8 ppm. Concentrations used for pupal treatment (2-h 2-days and 7-days old pupae) produced on adverse effect on adult emergence and longevity. Fecundity and egg hatchability were slightly affected. Pupal treatment was tolerable.

Descriptors/Keywords: CITRUS FRUIT, PUPAL FORMATION, HATCHABILITY, FECUNDITY, ADULT EMERGENCE, EGYPT

Record - 1020

ROBERTS, S., G. PARKE, AND S. CHARLES. 1977. REPRODUCTION STUDY OF AIRMILLED TECHNICAL DIFLUBENZURON IN BOBWHITE QUAIL: LABORATORY NO. 7E-6032. UNPUBLISHED STUDY RECEIVED FEB 6, 1978 UNDER 148-1259. PREPARED BY CANNON LABORATORIES, INC., SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 1021

ROBERTS, S., G. PARKE. 1976. REPORT: 8 DAY DIETARY LC50 STUDY OF DIMILIN 1G: BOBWHITE QUAIL AND MALLARD DUCKS: LABORATORY NO. 6E-2036. UNPUBLISHED STUDY RECEIVED JUL 31, 1978 UNDER 148-1259. PREPARED BY CANNON LABORATORIES, INC. SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 1022

ROBERTS, S. AND G. PARKE. 1976 ACUTE ORAL TOXICITY IN BOBWHITE QUAIL COMPOUND: TH-6040 99.4% PURE (AIR MILLED): LABORATORY NO. 6E-2430 A. UNPUBLISHED STUDY RECEIVED DEC. 23, 1976 UNDER 148-1258; PREPARED BY CANNON LABORATORIES, INC. SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 1023

ROBERTS, S. AND G. S. E. PARKE. 1976. ACUTE ORAL TOXICITY IN MALLARD DUCKS. LABORATORY NO. 6#-2430 B. UNPUBLISHED STUDY RECEIVED DEC. 23, 1976 UNDER 148-1258. PREPARED BY CANNON LABORATORIES, INC. SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS..

Record - 1024

WESTERN SPRUCE BUDWORM CHORISTONEURA OCCIDENTALIS JOINT ACTION OF PYRETHROIDS AND INSECT GROWTH REGULATORS BY CONTACT OR INGESTION

ROBERTSON J L; SMITH K C

J GA ENTOMOL SOC 19 (4). 1984. 454-462.

Full Journal Title: Journal of the Georgia Entomological Society

Language: ENGLISH

ABSTRACT

The toxicities of separate components and mixtures of each of 2 pyrethroids with each of 3 insect growth regulators were determined for 4th and 6th instar western spruce budworm, *C. occidentalis* Freeman. Mixture mortality rates were compared with those expected under a model of uncorrelated independent joint action of the separate components. The pyrethroids tested were fenvalerate and permethrin; the insect growth regulators tested were BAY SIR-8514 (N-[trifluoromethoxy phenyl] carbamoyl-2-chlorobenzamide), diflubenzuron and methoprene. Mixtures consisted of 9:1 proportions of insect growth regulator:pyrethroid. When 6th instars ingested permethrin combined with diflubenzuron, significantly higher mortality resulted than was expected under the model of uncorrelated independent joint action, i.e., synergism was observed. For all other chemical pairs, mixture response data was adequately described by the model and there was no apparent synergism among the compounds tested.

Descriptors/Keywords: N TRIFLUOROMETHOXYPHENYLCARBAMOYL-2-CHLOROBENZAMIDE, METHOPRENE, FENVALERATE, PERMETHRIN, DIFLUBENZURON, SYNERGISM, TOXICITIES, MORTALITY RATES

Record - 1025

JOINT ACTION OF A JUVENILE HORMONE ANALOG WITH BENZOYLPHENYLUREAS

INGESTED BY WESTERN SPRUCE BUDWORM CHORISTONEURA OCCIDENTALIS LEPIDOPTERA
TORTRICIDAE

ROBERTSON J L; SMITH K C; GRANETT J; RETNAKARAN A

DEP. AGRIC., BERKELEY, CA 94701, USA.

CAN ENTOMOL 116 (8). 1984. 1063-1068.

Full Journal Title: Canadian Entomologist

Language: ENGLISH

ABSTRACT

Mixtures of the juvenile hormone analog (JHA) methoprene and each of 3 benzoylphenylureas (BPU) were fed to 6th-instar western spruce budworm, *C. occidentalis* Freeman. The BPU tested were diflubenzuron, BAY SIR 8514 (N-[(trifluoromethoxy)phenyl]carbamoyl-2-chlorobenzamide), and EL-127063 (N-[[[(5-4-bromophenyl)-6-methyl-2-pyrazinyl]amino]carbonyl]-2-chlorobenzamide). Mixtures consisted of JHA:BPU combined in 1:9 proportions. Ingestion of methoprene combined with BAY SIR 8514 or diflubenzuron resulted in significantly lower mortality than expected under a simple model of uncorrelated, independent action. Ingestion of the mixture of methoprene and EL-127063 resulted in significantly enhanced toxicity over the upper response range (> 50% mortality).

Descriptors/Keywords: METHOPRENE, DIFLUBENZURON

Record - 1026

TOXICITY OF INSECTICIDES TO DOUGLAS-FIR TUSSOCK MOTH ORGYIA PSEUDOTSUGATA
LEPIDOPTERA LYMANTRIIDAE 2. RESIDUAL TOXICITY AND RAINFASTNESS

ROBERTSON J L; BOELTER L M

CAN ENTOMOL 111 (10). 1979. 1161-1176.

Full Journal Title: Canadian Entomologist

Language: ENGLISH

Subfile: BA (Biological Abstracts)

Fourth instar Douglas-fir tussock moth were used to assess the residual toxicity of 10 insecticides applied to Douglas-fir seedlings. Among the 10, carbaryl compared most favorably to DDT. Rainfastness of the insecticides was tested by a rainchamber. Permethrin, diflubenzuron and carbaryl were least affected by simulated rainfall, while acephate and trichlorfon were seriously and adversely affected.

Descriptors/Keywords: CARBARYL, DDT, PERMETHRIN, DIFLUBENZURON, ACEPHATE,
TRICHLORFON, RAINCHAMBER

Record - 1027

ROBINSON, F. 1979. THE EFFECTS OF REPEATED SPRAY APPLICATIONS OF DIMILIN W-25 ON
HONEY BEE APIS MELLIFERA COLONIES IN COTTON FIELDS (TOXICITY, EFFECTS ON BROOD
REARING). AM BEE JOURNAL 119(3): 193-194.

Record - 1028

TESTS OF ACARICIDES AGAINST APPLE RUST MITE ACULUS SCHLECHTENDALI

ROBINSON J; WINFIELD A L

ANN APPL BIOL 97 (SUPPL.). 1981. 18-19.

Full Journal Title: Annals of Applied Biology

Language: ENGLISH

Descriptors/Keywords: APPLE, CULTIVARS, BRAMLEYS SEEDLING, CRISPIN, TRIAZOPHOS,
ENDOSULFAN, CARBARYL, CYHEXATIN, CHLORPYRIFOS, PIRIMIPHOS, METHYL,
DIFLUBENZURON, BUPIRIMATE, DITALIMFOS, DITHIANON

Record - 1029

EFFECTS OF CONTROL CHEMICALS FOR DOUGLAS-FIR TUSsock MOTH
ORGYIA PSEUDOTSUGATA ON FOREST POLLINATION LEPIDOPTERA LYMANTRIIDAE

ROBINSON W S; JOHANSEN C A

MELANDERIA 30. 1978. 9-56.

Full Journal Title: Melanderia

Language: ENGLISH

ABSTRACT

Honey bees were badly injured or killed by treatment with acephate or carbaryl (Sevin 4 Oil formulation) at several dosages. Diflubenzuron had no effect on honey bee colonies. Activity of foraging wild bees after the sprays indicated a similar pattern of immediate effects from the chemicals. Reduction of foragers occurred for several days in plots treated with acephate or carbaryl, while depressions in populations were rare in untreated or diflubenzuron-treated plots. At least 35 of 39 of the more abundant forbs and shrubs in the area were benefited by insect pollination. Fruit production by *Mertensia paniculata* was reduced on an acephate-treated plot. However, no continuing effects were obtained with 17 spp. of plants sampled the year after application. Bumble bees and mason bees (*Osmia*) were the major native pollinators in the plots, representing about 50% and 25% of all bees observed. A succession of wild bee species emerging through the summer and 3-6 wk or late season blooming periods of all but 5 of 39 plants of importance to wildlife make it unlikely that a single application of chemicals would cause long-term disruption of the pollination ecology of Pacific Northwest [USA] forests at the elevations studied. Overgrazing by cattle had a greater adverse effect on forest vegetation. All other factors being equal in a cost-benefit analysis, the results of this study encourage the use of diflubenzuron as the least disruptive of pollination if control measures for Douglas-fir tussock moth are necessary in the future.

Descriptors/Keywords: USA, HONEY BEE COLONY, OSMIA, WILD BEE, FORB, SHRUB, FOREST, FOREST VEGETATION, MERTENSIA-PANICULATA, WILDLIFE, CATTLE, POLLINATORS, ACEPHATE, CARBARYL, DIFLUBENZURON, SUMMER

Record - 1030

ROBREDO, F. 1980. MASSIVE TREATMENTS WITH DIFLUBENZURON AGAINST THE PINE PROCESSIONARY CATERPILLAR IN SPAIN THRUMETOPOEA PITYOCAMPA BOLETIN- SERVICIO DE DEFENSA CONTRA PLAGAS E INSPECCION FITOPATOLOGICA 6(2):141-154.

Record - 1031

ROBREDO, F. 1980. CONTROL OF THE PINE PROCESSIONARY MOTH WITH DIMILIN, A NEW BIOLOGICAL, NONTOXIC AND NONCONTAMINATING INSECTICIDE. AGRICULTURA 49(575): 296-299.

Record - 1032

LABORATORY EVALUATION OF THE INSECT GROWTH REGULATOR DIFLUBENZURON
AGAINST BLACK FLY DIPTERA SIMULIIDAE LARVAE AND ITS EFFECTS ON NONTARGET
STREAM INVERTEBRATES

RODRIGUES C S; KAUSHIK N K

CAN ENTOMOL 118 (6). 1986. 549-558.

Full Journal Title: Canadian Entomologist

Language: ENGLISH

ABSTRACT

In laboratory tests conducted under simulated stream conditions treatment with the insect growth regulator diflubenzuron at 1.0 mg/L/30 min at 15.degree. C resulted in 100% mortality of *Simulium* larvae after 10 days. At 0.5 mg/L/15 min there was 97.6% mortality of *S. vittatum* larvae after 18 days in water at 10.5.degree. C. Diflubenzuron was less effective when the growth rate of simuliid larvae

during the test was slow due to inadequate nutrition, and it was more effective at 25 than at 20.degree. C, but there was no difference in efficacy between 10 and 20.degree. C. Efficacy against simuliid larvae varied inversely with their instar. Diflubenzuron at 1.0 mg/L/30 min was tested in the laboratory against selected nontarget invertebrates. Among the Ephemeroptera tested at 15.degree. C, Baetis pygmaeus, Leptophlebia sp., and Isonychia sp. proved susceptible but not Stenonema fuscum and Ephemerella subvaria. Similarly diflubenzuron had little effect on the perlid stonefly Paragnetina media at 15.degree. C and on the filter-feeding caddisfly Hydropsyche betteni at 20.degree. C. Chironomid larvae (Phaenopsectra sp.) tested at 20.degree. C were affected and the amphipods Gammarus pseudolimnaeus and Hyalella azteca were particularly susceptible at 25 but not at 15.degree. C.

Descriptors/Keywords: SIMULIUM-VITTATUM, BAETIS-PYGMAEUS, LEPTOPHLEBIA-SP, ISONYCHIA-SP, STENONEMA-FUSCUM, EPHEMERELLA-SUBVARIA, PARAGNETINA-MEDIA, HYDROPSYCHE-BETTENI, PHAENOPSECTRA-SP, GAMMARUS-PSEUDOLIMNAEUS, HYALELLA-AZTECA, MORTALITY, GROWTH RATE

Record - 1033

RODRIGUES, C. S. 1982. EFFECTS OF INSECTICIDES INCLUDING INSECT GROWTH REGULATORS ON BLACK FLY (DIPTERA: SIMULIIDAE) LARVAE AND ASSOCIATED NON-TARGET STREAM INVERTEBRATES. THESIS. UNIV. OF GUELPH, GUELPH, ONTARIO.

Record - 1034

EVALUATION OF THE INSECT GROWTH REGULATORS METHOPRENE AND DIFLUBENZURON AGAINST FLOOD WATER MOSQUITOES DIPTERA CULICIDAE IN SOUTHWESTERN ONTARIO CANADA

RODRIGUES C S; WRIGHT R E

CAN ENTOMOL 110 (3). 1978 319-324.

Full Journal Title: Canadian Entomologist

Language: ENGLISH

ABSTRACT

In field trials conducted at Guelph, Ontario [Canada], methoprene (Altosid SR-10) at 0.028 kg AI[active ingredient]/ha (0.025 lb AI/acre) effectively controlled spring Aedes species [A. stimulans (Walker), A. fitchii (Felt and Young), A. excrucians (Walker), A. canadensis (Theobald), A. cinerens (Meigen), A. implicatus (Vockeroth) and A. vexans (Meigen)] following treatment of 3rd- and 4th-instar larvae. However, when treated in the 1st-3rd instar, only partial control was obtained. The formulation remained active in the pools for 13 days during which time the average temperature was < 20.degree. C. Methoprene also effectively controlled early-summer Aedes vexans (Meigen) after treatment of 4th-instar larvae. Diflubenzuron (Dimilin 25% WP [wetttable powder]) at 0.022 kg AI/ha and 0.045 kg AI/ha (0.02 and 0.04 lb AI/acre) was effective against spring Aedes species following treatment of 3rd-instar larvae.

Descriptors/Keywords: AEDES-STIMULANS, AEDES-FITCHII, AEDES-EXCRUCIANS, AEDES-CANADENSIS, AEDES-CINEREUS, AEDES-IMPLICATUS, AEDES-VEXANS, INSTAR STAGE

Record - 1035

RODRIGUEZ J. G. (ED). 1979. EFFECTS OF THE INSECTICIDE DIFLUBENZURON ON SOIL MITES OF A DRY FOREST ZONE IN BRITISH-COLUMBIA CANADA. RECENT ADVANCES IN ACAROLOGY, VOL 1, 5TH INTL. CONG. OF ACAROLOGY, EAST LANSING, MI. AUG. 6-12, 1978. PP. 129-134. XI-631P. ACADEMIC PRESS, NEW YORK, NY.

Record - 1036

ROGERS, A. J. , C. B. RATHBURN, E. J. BEIDLER, ET AL. 1976. TESTS OF TWO INSECT GROWTH REGULATORS FORMULATED ON SAND AGAINST LARVAE OF SALT-MARSH MOSQUITOES. MOSQUITO NEWS 36(3): 273-277.

Record - 1037

INHIBITION OF LARVAL GROWTH IN SPODOPTERA FRUGIPERDA BY SUBLETHAL DIETARY CONCENTRATIONS OF INSECTICIDES

ROSS D C; BROWN T M

J AGRIC FOOD CHEM 30 (1). 1982. 193-196.

Full Journal Title: Journal of Agricultural and Food Chemistry

Language: ENGLISH

ABSTRACT

Sublethal concentrations of some insecticides inhibited larval growth of the fall armyworm *S. frugiperda*. Fenvalerate, permethrin, endosulfan, SD-35651 and CGA-72662 inhibited growth by 39% at 12 days, while chlorpyrifos, methyl parathion, sulprofos, precocene and piperonyl butoxide were less inhibitory. Toxaphene, carbaryl, thiodicarb, methomyl, amitraz, chlordimeform and imidazole produced only a transitory growth reduction. Aldicarb, profenofos, CGA-19255, diflubenzuron and SKF-525-A had no sublethal effect while methiocarb and methoprene increased growth. Dose-response relationships were determined for fenvalerate, methyl parathion, SD-35651 and CGA-72662.

Descriptors/Keywords: FENVALERATE, PERMETHRIN, ENDOSULFAN, SD-35651, CGA-72662, CHLORPYRIFOS, METHYL PARATHION, SULPROFOS, PRECOCENE, PIPERONYL BUTOXIDE, TOXAPHENE, CARBARYL, THIODICARB, METHOMYL, AMITRAZ, CHLORDIMEFORM, IMIDAZOLE, ALDICARB, PROFENOFOS, CGA-19255, DIFLUBENZURON, SKF-525-A, METHIOCARB, METHOPRENE, INSECT GROWTH REGULATOR

Record -1038

EFFECTS ON GERMAN COCKROACH NYMPHS OF CONTACT EXPOSURE TO IGRS SINGLY AND IN COMBINATION

ROSS M H; COCHRAN D G

ENTOMOL EXP APPL 61 (2). 1991. 117-122.

Full Journal Title: Entomologia Experimentalis et Applicata

Language: ENGLISH

ABSTRACT

Late instar German cockroach [*Blattella germanica*] male and female nymphs were exposed continuously for two weeks to surfaces treated with fenoxycarb, diflubenzuron, and pyriproxyfen, singly and in combination. Concentrations were determined that eliminated or nearly eliminated reproduction in matings with untreated mates, either through mortality, effects on reproduction, or a combination of mortality and 'sterility' (no hatch). The major effect of fenoxycarb, pyriproxyfen, and pyriproxyfen plus fenoxycarb was on reproduction. The major effect of diflubenzuron was mortality. No hatch occurred in matings of females that were exposed to low concentrations of pyriproxyfen and fenoxycarb (2 ng/cm² and 6 ng/cm², respectively); sterility was incomplete when females were exposed to 600 ng/cm² of diflubenzuron. Mortality and sterility acted together to eliminate productive matings (matings that produced nymphs) when relatively high concentrations of diflubenzuron were combined with one or both of the other insect growth regulators (IGRs). In the triple combination, very small amounts of fenoxycarb and pyriproxyfen (total 1.1 ng/cm²) combined with 200 ng/cm² of diflubenzuron eliminated productive matings of treated females, but similar results with treated males were found only at higher concentrations of each IGR.

Descriptors/Keywords: BLATTELLA-GERMANICA, MORTALITY, STERILITY, INSECT GROWTH REGULATOR, FENOXYCARB, DIFLUBENZURON, PYRIPROXYFEN, BIOLOGICAL CONTROL

Record - 1039

RESPONSE OF LATE-INSTAR BLATTELLA GERMANICA DICTYOPTERA BLATTELLIDAE TO DIETARY INSECT GROWTH REGULATORS

ROSS M H; COCHRAN D G

J ECON ENTOMOL 83 (6). 1990. 2295-2305.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Late-instar German cockroaches, *Blattella germanica* (L.), were used to evaluate the relative effects of single treatments and combinations of three insect growth regulators (IGRs): pyriproxyfen, fenoxycarb, and diflubenzuron. Groups of 15 males or 15 females were held for 2 wk on food treated with varying amounts of IGRs. After removal, newly mature adults were placed with untreated adults of the opposite sex. Mortality, adult phenotype (normal wings, divergent wings, curly wings, curly wings, and nymphoids), and reproduction were assessed. Mortality occurred largely in the nymphal stage except when all three IGRs were combined. Neither the average number of nymphs per egg case nor hatch of egg cases from phenotypically normal cockroaches (normal wings, occasional darkening of the body) was affected in single treatments or in combinations of two IGRs, but nymphal numbers were reduced when the three IGRs were combined. Hatch from matings of insects with divergent wings varied. At low concentrations (3-10 ppm), hatch was generally normal; at high concentrations, most mating tests were unproductive. Mating tests of cockroaches with curly wings were almost always unproductive. When males with curly wings were mated, females dropped either unfertilized egg cases (no mating) or partially fertilized egg cases. Curly-wing females either dropped unfertilized egg cases or failed to form egg cases because of deleterious effects on ovarian development. Nymphoids did not mate. Diflubenzuron at 100 ppm had no effect other than causing the appearance of a few insects with divergent wings. Effects on phenotype and reproduction began at 3 ppm of both pyriproxyfen and fenoxycarb and at a comparable concentration in the combination of pyriproxyfen + fenoxycarb (1 ppm each). Female sterility was complete at 100 ppm of pyriproxyfen and fenoxycarb. When pyriproxyfen or fenoxycarb was combined with equal amounts of diflubenzuron, the number of productive matings was not reduced at 6 ppm (3 ppm per each IGR). At 20 ppm (10 ppm per each IGR), a reduction in productive matings coincided with the appearance of curly wings. Complete female sterility occurred only at 600 ppm (300 ppm per IGR). The most severe effects occurred in the experiment with equal amounts of pyriproxyfen, fenoxycarb, and diflubenzuron. In addition to reduced hatch from normal phenotypes, this experiment caused complete male sterility (300 ppm; 100 ppm of each IGR). Female sterility was complete at 900 ppm (300 ppm of each IGR).

Descriptors/Keywords: INSECT, INSECTICIDE, PYRIPROXYFEN, FENOXYCARB, DIFLUBENZURON, MORTALITY, PHENOTYPE, CHANGE, WING MORPHOLOGY, NYMPHOID, MATING, REPRODUCTION, STERILITY

Record - 1040

ROSSUM, A. ET AL. 1983. HIGH PERFORMANCE LIQUID CHROMATOGRAPHIC ANALYSIS OF DIFLUBENZURON AND ITS FORMULATIONS: COLLABORATIVE STUDY. J. ASSOC. OFFICIAL ANALYTICAL CHEMISTS 66(2): 312-316.

Record - 1041

ROTH, J. C., A. J. HORNE, AND S. VASAK. 1976. THE EFFECTS OF DIMILIN ON THE NITROGEN FIXATION IN THE AUTUMN 1976 BLOOM OF BLUE-GREEN ALGAE IN CLEAR LAKE, CALIFORNIA. REPORT CLEAR LAKE ALGAL RESEARCH UNIT LAKEPORT, CALIFORNIA.

Record - 1042

CURRENT PRACTICES IN THE CHEMOTHERAPEUTIC CONTROL OF SEA LICE
INFESTATIONS IN AQUACULTURE A REVIEW

ROTH M; RICHARDS R H; SOMMERVILLE C

J FISH DIS 16 (1). 1993. 1-26.

Full Journal Title: Journal of Fish Diseases

Language: ENGLISH

Descriptors/Keywords: REVIEW, TRICHLORFON, DICHLORVOS, IVERMECTIN, AZAMETHIPHOS, PYRETHRUM, PYRETHRIN, AVERMECTIN, FORMALIN, MALATHION, CARBARYL, DIFLUBENZURON, HYDROGEN PEROXIDE, ANTIPARASITIC-DRUG, ANTIPARASITIC AGENT, ONION, GARLIC, ORGANOPHOSPHORUS, PESTICIDE, ENVIRONMENTAL TOXICOLOGY

Record - 1043

IMPACT OF CHEMICALS FOR CONTROL OF THE DOUGLAS-FIR TUSsock MOTH UPON
POPULATIONS OF ANTS AND YELLOWJACKETS HYMENOPTERA FORMICIDAE VESPIDAE

ROUSH C F; AKRE R D

MELANDERIA 30. 1978. 95-110.

Full Journal Title: Melanderia

Language: ENGLISH

ABSTRACT

The effect of 3 insecticides upon ants and yellowjackets was monitored on nine 320 acre research plots (6 treatment, 3 control) in northeastern Oregon [USA] forests. This was part of a 3 yr study to determine which material was least injurious to populations of beneficial insects if applied for future Douglas-fir tussock moth control. Acephate when applied at 1 and 2 lb ai[active ingredient]/acre had a severe effect upon mound-building ants of the *Formica rufa* group but showed no apparent effect on yellowjackets (*Vespula* and *Dolichovespula*). Diflubenzuron (2 and 4 oz ai/acre) had no effect on *Formica* but depressed yellowjacket populations. This effect was still observed during the year following treatment. The immediate effect of carbaryl (Sevin 4 Oil formulation), 2 lb ai/acre, was serious, but 2 wk post-treatment activity was again at a pre-spray level. Yellowjacket populations were depressed at one of 2 carbaryl-treated plots but this was also evident at a control plot and no effect was detected the following year.

Descriptors/Keywords: OREGON, USA, FOREST, FORMICA-RUFA, VESPULA, DOLICHOVESPULA, ACEPHATE, DIFLUBENZURON, CARBARYL

Record - 1044

EFFECTS OF THE INSECT GROWTH REGULATOR DIMILIN ON THE COCKCHAFER
MELOLONTHA MELOLONTHA AND GASTROIDEA VIRIDULA

RUECHI R; JOSSI W

MITT SCHWEIZ ENTOMOL GES 52 (1). 1979. 75-82.

Full Journal Title: Mitteilungen der Schweizerischen Entomologischen Gesellschaft

Language: ENGLISH

ABSTRACT

After feeding of males and females of *M. melolontha* (Coleoptera, Scarabaeidae) with leaves of beech trees sprayed with 0.1% Dimilin WP [wetttable powder] 25, an ovicidal effect of 100% was observed. Dimilin has a weak repellent effect on the insects. Because of its low toxicity to birds and mammals and its good ovicidal effect Dimilin is a promising agent for the control of *M. melolontha*. Dimilin was also effective against larvae and eggs after feeding of larvae and adults of *G. viridula* (Coleoptera, Chrysomelidae) with sprayed leaves of sorrel.

Descriptors/Keywords: BEECH TREE, SORREL, BIRD, MAMMAL CONTROL, TOXICITY, OVICIDE

Record - 1045

RUKAVISHNIKOV, B. I. 1980. DIMILIN (DIFLUBENZURON) FOR CONTROL OF HARMFUL INSECTS (A REVIEW OF THE FOREIGN LITERATURE) (PESTS OF PLANTS, ANIMALS, AND MAN). ZASHCHITA RASTENII. MAR. 1980 (3): 46-48.

Record - 1046

EFFECTIVENESS OF DIFLUBENZURON ON BOLL WEEVILS ANTHONOMUS GRANDIS IN THE TEXAS USA ROLLING PLAINS

RUMMEL D R

SOUTHWEST ENTOMOL 0 (SUPPL. 1). 1980. 8-14.

Full Journal Title: Southwestern Entomologist

Language: ENGLISH

ABSTRACT

Under conditions of heavy boll weevil infestation 8 applications of diflubenzuron at rates of 35, 70 and 140 g AI[active ingredient]/ha resulted in a seasonal average adult boll weevil, *A. grandis* Boheman, emergence of 44.4, 40.0, and 27.0%, respectively. Adult boll weevil emergence from untreated cotton plots averaged 73.5%. Lint yield data indicated the 70 and 140 g AI/ha rates to be equal in effectiveness to 8 applications of azinphosmethyl at a rate of 336 g AI/ha. Four applications of diflubenzuron at rates of 52.5, 70, and 140 g AI/ha directed against a light overwintered boll weevil population resulted in adult emergence of 24.5, 13.4 and 9.7%, respectively. All rates of diflubenzuron were less detrimental to selected beneficial arthropods [*Coccinellidae* (adults and larvae), *Collops* sp. (adults), *Scymnus* sp. (adults), *Nabis* sp. (adults), *Geocoris* sp. (adults), *Oris* sp. (adults), *Chrysopa* sp. (adults and larvae) and all spiders] than azinphosmethyl.

Descriptors/Keywords: COLLOPS-SP, SCYMNUS-SP, NABIS-SP, GEOCORIS-SP, ORIS-SP, CHRYSOPA-SP, COCCINELLIDAE, SPIDERS, COTTON, LINT, YIELD, AZINPHOS-METHYL, INSECTICIDE

Record - 1047

COMPARATIVE EFFECTIVENESS OF DIFLUBENZURON AND AZINPHOS-METHYL FOR CONTROL OF BOLL WEEVILS ANTHONOMUS GRANDIS

RUMMEL D R; PRUITT G R; WHITE J R; WADE L J

SOUTHWEST ENTOMOL 4 (4). 1979. 315-320.

Full Journal Title: Southwestern Entomologist

Language: ENGLISH

ABSTRACT

Eight applications of diflubenzuron at rates of 35, 70 and 140 g AI[active ingredient]/ha resulted in a seasonal average adult boll weevil emergence of 44.4, 40.0 and 27.0%, respectively. Adult weevil emergence from untreated cotton check plots averaged 73.5%. Under conditions of heavy weevil infestation, lint yield data indicated the 70 and 140 g AI/ha rates to be equal in effectiveness to 8 applications of azinphosmethyl at a rate of 336 g AI/ha. All rates of diflubenzuron were less detrimental to selected beneficial arthropods than azinphosmethyl.

Descriptors/Keywords: ARTHROPODS, COTTON

Record - 1048

OVICIDAL ACTIVITY OF DIFLUBENZURON ON CALLOSOBRUCHUS MACULATUS FAB

RUP P J; CHOPRA P K

INDIAN J AGRIC SCI 57 (5). 1987. 378-379.

Full Journal Title: Indian Journal of Agricultural Sciences

Language: ENGLISH

Descriptors/Keywords: VIGNA-RADIATA, INSECTICIDE, ABNORMAL ADULT EMERGENCE

Record - 1049

EFFECT OF DIFLUBENZURON ON EGG VIABILITY FECUNDITY AND ADULT LONGEVITY OF THE BANANA FRUIT FLY ZAPRIONUS PARAVITTIGER DIPTERA DROSOPHILIDAE

RUP P J; CHOPRA P K

J ECON ENTOMOL 78 (5). 1985. 1118-1120.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

The longevity of adult *Zaprionus paravittiger* (Godble and Vaidya) decreased from 85 to 20 days compared with controls when they fed ad lib. upon diet containing 100 ppm diflubenzuron. Fecundity was reduced significantly from 141.70 \pm 1.78 to 112.74 \pm 3.77 at 50 ppm and the fertility of the eggs laid on one day posttreatment was reduced from 86 to 20% compared with the control. The maximum effect was on the eggs laid 1 day after treatment. This effect gradually declined with time with concentrations up to 100 ppm, but was permanent with higher concentrations. Eggs dipped in 1 ppm diflubenzuron suspension were not viable.

Descriptors/Keywords: INSECT GROWTH REGULATOR, BIOASSAY

Record - 1050

REINVESTIGATION OF EFFECTS OF DIFLUBENZURON ON THE DEVELOPMENT AND REPRODUCTION IN SUSCEPTIBLE AND ORGANO PHOSPHATE RESISTANT STRAINS OF THE HOUSE FLY MUSCA DOMESTICA

RUPES V; ZDAREK J; PINTEROVA J

Z ANGEW ENTOMOL 84 (3). 1977 328-334.

Full Journal Title: Zeitschrift fuer Angewandte Entomologie

Language: ENGLISH

ABSTRACT

A considerable cross resistance to diflubenzuron was found with topical application of the compound to larvae of several organophosphate resistant strains of the housefly. Low cross resistance and high effectiveness was found when diflubenzuron was applied with the food. Noxious effects of the chemical include disturbances at hatching, molting, formation of the puparium, pupal apolysis, evagination of the pupal head and emergence of the adult fly. Changes in the biophysical properties of the chitin deficient cuticle are presumed to be the cause of the above defects.

Descriptors/Keywords: INSECT GROWTH REGULATOR, LARVA, HATCH, MOLT, PUPATION

Record - 1051

TOXICOLOGICAL STUDIES ON THE EGYPTIAN COTTON LEAFWORM SPODOPTERA LITTORALIS 1. POTENTIATION AND ANTAGONISM OF SYNTHETIC PYRETHROID ORGANO PHOSPHORUS AND UREA DERIVATIVE INSECTICIDES

SAAD A S A; ELEWA M A; ALY N M; AUDA M; EL-SEBAE A H

MEDED FAC LANDBOUWWET RIJKSUNIV GENT 46 (2). 1981 559-572.

Full Journal Title: Mededelingen van de Faculteit Landbouwwetenschappen Rijksuniversiteit Gent

Language: ENGLISH

ABSTRACT

Joint action effect using combinations of different insecticidal groups against different strains of *S. littoralis* Boisd., was studied. The LC50 values showed that deltamethrin was the most toxic insecticide

followed by cypermethrin, fenvalerate, chlorpyrifos, RH 218/T and phosfolan. The least toxic compounds were diflubenzuron, Bactospeine and Thuricide. An antagonistic effect was effected between deltamethrin and phosfolan, and fenvalerate and chlorpyrifos, while an additive effect was obtained in the case of cypermethrin with chlorpyrifos at the ratio of 1:1 of LC25 against the Alexandria strain of *Spodoptera* larvae. Potentiation effect occurred in the case of deltamethrin and diflubenzuron at the ratio of 1:1 while an antagonistic effect was shown in the case of cypermethrin and diflubenzuron in the case of resistant strain to methamidophos. Potentiation to addition effect was observed in the case of chlorpyrifos and diflubenzuron against Alexandria strain of *S. littoralis*. The combination of chlorpyrifos and Bactospeine, and phosfolan and diflubenzuron gave an antagonistic effect. Joint action in the case of the pirazophos-tolerant strain indicates that an antagonistic effect occurred in the case of fenvalerate and diflubenzuron, deltamethrin, cypermethrin and diflubenzuron, while potentiation effect was observed in the case of chlorpyrifos and diflubenzuron.

Descriptors/Keywords: BACTOSPEINE, THURICIDE, DELTAMETHRIN, CYPERMETHRIN, FENVALERATE, CHLORPYRIFOS, RH-218-T, PHOSFOLAN, DIFLUBENZURON, LC-50, LC-25

Record - 1052

PROLONGED INHIBITION OF BROOD PRODUCTION IN DENDROCTONUS RUFIPENNIS
COLEOPTERA SCOLYTIDAE BY DIMILIN

SAHOTA T S; IBARAKI A

CAN ENTOMOL 112 (1). 1980. 85-88.

Full Journal Title: Canadian Entomologist

Language: ENGLISH

ABSTRACT

Pre-attack feeding for 48 h on a diet containing 200 ppm Dimilin (diflubenzuron), by adult *D. rufipennis* (Kirby) (Coleoptera: Scolytidae), caused a complete inhibition of larval eclosion from eggs deposited by such beetles in the untreated host logs [*Picea gluaca* (Moench) Voss] for the duration of the reproductive cycle. Inhibition of larval eclosion was mediated through the females only. Pre-attack application of 1% Dimilin to host logs reduced the number of larvae/gallery by 55% and reduced the number of galleries with successful larval eclosion by 42%.

Descriptors/Keywords: PICEA-GLAUCA, DIFLUBENZURON, LARVAL ECLOSION, REPRODUCTIVE CYCLE, GALLERY REDUCTION, PRE ATTACK APPLICATION

Record - 1053

SALAMA, H. S., M. S. FODA, F. N. ZAKI, AND S. MOAWAD. 1984. POTENCY OF COMBINATIONS OF BACILLUS THURINGIENSIS AND CHEMICAL INSECTICIDES ON SPODOPTERA LITTORALIS LEPIDOPTERA NOCTUIDAE. J. ECON. ENTOMOL. 77:885-890.

Record - 1054

EFFECT OF THE MOLTING INHIBITOR DIMILIN ON THE COTTON LEAFWORM SPODOPTERA LITTORALIS IN EGYPT

SALAMA H S; MAGD EL-DIN M

Z ANGEW ENTOMOL 83 (4). 1977 415-419.

Full Journal Title: Zeitschrift fuer Angewandte Entomologie

Language: ENGLISH

ABSTRACT

The urea analogue Dimilin (PH 6040) proved an effective ovicide against *S. littoralis* eggs. A lethal effect of 100% was induced in the eggs at a concentration of 5 ppm. Different larval instars were affected by concentrations of 30-50 ppm incorporated in the diet; they died a few days after feeding and during ecdysis. At sublethal doses, the compound induced developmental retardation and few deformities

and thus, it resembled juvenile hormone analogues. Dimilin probably has a specific mode of action which interferes with the deposition of chitin. The newly formed cuticle becomes less rigid and cannot withstand the internal pressure during ecdysis or give sufficient support to the muscles involved in ecdysis, resulting in an inability to cast the exuviae and finally in death. The fact that Dimilin induces no harmful effect on the parasites and predators in nature, in addition to its safety to warm blooded animals, encourages its use on a wide scale quite safely and efficiently.

Descriptors/Keywords: PARASITES, PREDATORS, HOMEOTHERM, INSECTICIDE, JUVENILE HORMONE ANALOG, CHITIN DEFORMITIES, ECDYSIS

Record - 1055

SALAMA, H. S., Z. A. MOTAGALLY, AND U. SKATULLA. 1976. ON THE MODE OF ACTION OF DIMILIN AS A MOULTING INHIBITOR IN SOME LEPIDOPTEROUS INSECTS (PORTHETRIA DISPAR, LYMANTRIA MONACHA, BOARMIA BISTORTATA). Z. ANGEW ENTOMOL. 80 (4): 396-407.

Record - 1056

THE TOXICITY OF EIGHT INSECTICIDES TO SIXTH INSTAR LARVAE AND ADULT BEETLES OF TRIBOLIUM CASTANEUM HERBST

SALEEM M A; SHAKOORI A R

DEP. ZOOLOGY, UNIVERSITY PUNJAB, QUAIDI-I-AZAM CAMPUS, LAHORE.

PAK J ZOOL 22 (3). 1990. 207-216.

Full Journal Title: Pakistan Journal of Zoology

Language: ENGLISH

ABSTRACT

The LC₅₀ (through residual film method) for sixth instar larvae and adult beetles of *Tribolium castaneum* (Herbst.) were determined against Ambush 25EC (107.15 and 10ppm), Talcord 10EC (79.43 and 7.08ppm), Cymbush 10EC (70.79 and 5.62ppm), Ripcord 25EC (56.23 and 4.47 ppm), gamma-BHC 25WP (630.96 and 100.00ppm), Malathion 25EC (1348.96 and 1258.92 ppm), and Turicide HP (2511.89 and 1995.26 .mu.g/g of diet). LC₅₀ of Dimilin 25WP for sixth instar larvae was 1412.54ppm whereas it was not estimated for beetles, as chitin inhibitors are generally not effective to the adult stage.

Descriptors/Keywords: LETHALITY, STORED GRAIN PEST, AMBUSH, TALCORD, CYMBUSH, RIPCORDER, GAMMA BHC, MALATHION, THURICIDE, DIMILIN, RESIDUAL, FILM METHOD

Record - 1057

JOINT EFFECTS OF DIMILIN AND AMBUSH ON ENZYME ACTIVITIES OF TRIBOLIUM CASTANEUM LARVAE

SALEEM M A; SHAKOORI A R

PESTIC BIOCHEM PHYSIOL 29 (2). 1987. 127-137.

Full Journal Title: Pesticide Biochemistry and Physiology

Language: ENGLISH

ABSTRACT

Sublethal concentrations of 10 and 20 ppm (0.25 and 0.5 .mu.M) Ambush decreased amylase activity and increased acid phosphatase (AcP) and lactate dehydrogenase (LDH) activities in sixth-instar *Tribolium castaneum*. Dimilin at 250 and 500 ppm (8 and 10 .mu.M) raised activities of amylase, AcP, LDH and alanine aminotransferase (ALAT) and depleted trehalase activity. The remaining enzymes, cholinesterase (ChE), alkaline phosphatase (AkP), aspartate aminotransferase (ASAT), and isocitrate dehydrogenase (ICDH), were not affected by either insecticide. Mixtures of Dimilin and Ambush at 250 .+-. 10 and 500 .+-. 20 ppm resulted in a disturbance of almost all the enzymes tested in this study, suggesting a possible synergistic effect with reference to trehalase, ASAT, and AkP activities and an

antagonistic effect with reference to amylase, AcP, LDH, ICDH, ChE and ALAT activities. Feeding on untreated flour did not restore any of the affected enzyme activities to normal levels.

Descriptors/Keywords: AGRONOMIC PEST, AMYLASE ACTIVITY, ACID PHOSPHATASE, LACTATE DEHYDROGENASE, ALANINE AMINOTRANSFERASE, TREHALASE ACTIVITY, ISOCITRATE DEHYDROGENASE, FEEDING, SYNERGISM

Record - 1058

LARVICIDAL EFFECTIVENESS OF 3 CONTROLLED RELEASE FORMULATIONS OF DURSBAN AND DIMILIN ON CULEX PIPIENS AND AEDES AEGYPTI

SALEH M S; GAABOUB I A; KASSEM S M I

J AGRIC SCI 97 (1). 1981. 87-96.

Full Journal Title: Journal of Agricultural Science

Language: ENGLISH

ABSTRACT

Three plastic formulations of both Dursban and Dimilin were tested as controlled-release pellets against larvae of *C. pipiens* and *A. aegypti*. Each pellet had an initial concentration of 0.116 .mu.g/l. Results showed that Dimilin did not appear to give as high percentages of larval mortality as Dursban although in most cases a clearly delayed inhibition of adult emergence was noted. Larval mortalities of 90-100% were obtained in 3-14 (in the case of *C. pipiens*) and 1-12 (in the case of *A. aegypti*) days when the 2nd instar larvae were treated with Dursban formulations. With the Dimilin formulations no more than 31% (in case of *C. pipiens*) and 24% (in case of *A. aegypti*) larval mortalities occurred up to 13-14 days until completion of pupation. The results obtained showed that formulation 1 (polyvinyl chloride + dibutyl phthalate + toxicant) was the most effective of the 3 tested ones, followed by formulations 2 (polyvinyl chloride + dibutyl phthalate + triton X-100 + toxicant) and 3 (polyvinyl chloride + dibutyl phthalate + triton X-100 + ammonium carbonate + citric acid + water + toxicant), respectively. This was so on the basis both of percentage of larval mortality and time post-treatment. The durations of effectiveness of Dursban pellets were 123, 94 and 86 days for the formulations 1, 2 and 3, respectively. On the basis of number of tests with over 90% larval mortality, formulation 2 gave the highest level (13 tests) followed by formulation 3 (12 tests) and finally formulation 1 (10 tests). Consideration must be given to the cumulative effect of these factors of activity when using these formulations for control of mosquito larvae. Activity indices also proved that there was no definite variation in the toxicity of both DDT-susceptible and resistant strains against these formulations. Such results were obtained with Dimilin which confirmed that formulation 3 was the most effective one. The durations of effectiveness were about 112-115 (11-67% inhibition of adult emergence), 111-113 (11-93% inhibition of adult emergence) and 102-113 (12-100% inhibition of adult emergence) days for formulations 1, 2 and 3, respectively, for the susceptible and resistant lines of *C. pipiens* and *A. aegypti*.

Descriptors/Keywords: POLY VINYL CHLORIDE, DI BUTYL PHTHALATE, TOXICANT, MORTALITY, DDT

Record - 1059

SALEM, F. M. 1979. EFFICACY OF AN INSECT GROWTH REGULATOR, DIMILIN, ON THE NEMATODE COMMUNITY. (PRATYLENCHUS, TYLENCHORHYNCHUS AND CRICONEMOIDES) IN A MAIZE FIELD. ANZEIGER FUR SCHADLINGSKUNDE, PFLANZEN UND UMWELTSCHUTZ 52(7): 107-108.

Record - 1060

CHANGES IN PROTEIN ELECTROPHORETIC PATTERN IN SPODOPTERA LITTORALIS INSECTA AFTER DIMILIN AND INSECT GROWTH REGULATORS TREATMENT

SAMMOUR E A; KUCERA M; KANDIL M H; ABDALLAH S A

COMP BIOCHEM PHYSIOL C COMP PHARMACOL TOXICOL 84 (2). 1986. 307-310.

Full Journal Title: Comparative Biochemistry and Physiology C Comparative Pharmacology and Toxicology
ABSTRACT

Subfile: BA (Biological Abstracts)

1. No newly formed protein fractions in *Spodoptera littoralis* larvae and pupae after treatment with Dimilin and SIR (insect growth regulators) were detected by means of polyacrylamide gel electrophoresis. 2. At the beginning of Dimilin action (in newly moulted 6th instar larvae) the main tendency in the haemolymph and integument is a decrease in concentration of some protein fractions. 3. At the end of Dimilin action (four-day-old 6th instar larvae and pupae) the main tendency is an increase of some protein fractions. 4. The action of SIR was similar to Dimilin.

Descriptors/Keywords: TRIFLURON, STERILITY, LARVAL STAGE, PUPAL STAGE, PHARMACODYNAMICS, INTEGUMENT, HEMOLYMPH

Record - 1061

EFFECTS OF AN OPERATIONAL APPLICATION OF DIMILIN ON NON-TARGET INSECTS

SAMPLE B E; BUTLER L; WHITMORE R C

CAN ENTOMOL 125 (2). 1993. 173-179.

Full Journal Title: Canadian Entomologist

Language: ENGLISH

ABSTRACT

Effects of an operational application of Dimilin on non-target insects were evaluated in eastern West Virginia [USA] in 1988 and 1989. Dimilin was applied in 1988 (70, 75 g AI per ha). Insects were collected by light-traps at seven pairs of Dimilin-treated and control sites. Lepidoptera experienced the greatest impact, displaying reduced abundance and species richness at treated sites. No effects were observed among Coleoptera, Diptera, or Hymenoptera.

Descriptors/Keywords: INSECTICIDE, LEPIDOPTERA, COLEOPTERA, HYMENOPTERA, DIPTERA, SPECIES ABUNDANCE, SPECIES RICHNESS, WEST VIRGINIA USA

Record - 1062

THE OVICIDAL AND LARVICIDAL ACTION OF DIFLUBENZURON ON EARIAS VITTELLA

SAMRAJ D A; JESUDASAN R W A

PESTICIDES (BOMBAY) 23 (8). 1989. 29-30.

Full Journal Title: PESTICIDES (Bombay)

Language: ENGLISH

Descriptors/Keywords: INSECT, INSECTICIDE, CHITIN INHIBITOR, INTEGRATED PEST MANAGEMENT, PROGRAM, FRUITS, AGRICHEMICAL, AGRICULTURE

Record - 1063

EFFICACY OF THE INSECT GROWTH REGULATORS METHOPRENE FENOXYCARB AND DIFLUBENZURON AGAINST RHYZOPERTHA DOMINICA F. COLEOPTERA BOSTRICHIDAE ON MAIZE AND PADDY RICE

SAMSON P R; PARKER R J; HALL E A

J STORED PROD RES 26 (4). 1990. 215-222.

Full Journal Title: Journal of Stored Products Research

Language: ENGLISH

ABSTRACT

The activity of fresh deposits of methoprene, fenoxycarb and diflubenzuron against F1 progeny of *Rhyzopertha dominica* on maize and paddy was compared with that on wheat, at two equilibrium relative

humidities. There were differences between slopes of log concentration-probit (lc-p) lines for different compounds, and for the same compound on different grains. Judging by values of the IC99.9, i.e. the concentration which inhibited progeny production by 99.9%, the order of activity against F1 progeny on different grains was: methoprene, wheat and paddy > maize; fenoxycarb, wheat > paddy > maize; diflubenzuron, wheat and maize > paddy. Equilibrium relative humidity (e.r.h.) had no consistent effect on activity-at 90% e.r.h., the IC50 of fenoxycarb on wheat was reduced and the IC50 of diflubenzuron on maize was increased compared with 70% e.r.h., and other treatments were unaffected. The efficacy of these compounds on maize and paddy against F1 and F2 progeny was evaluated during 48 weeks storage at 30.degree.C, 70% r.h. The resolved S isomer of methoprene was also included. Slopes of lc-p lines were greater against the F2 than against the F1, particularly using diflubenzuron on paddy, with corresponding smaller values of the IC99.9. Equally effective concentrations did not decline systematically over 48 weeks. Minimum effective application rates were judged as the concentrations that prevented living F2 progeny in at least 2 of 3 replicates. Estimates for 48 weeks protection on maize were: methoprene, 2 mg kg-1; S-methoprene, 1 mg kg-1; fenoxycarb, 10 mg kg-1; and diflubenzuron, 5 mg kg-1. Corresponding estimates on paddy were 0.15 mg kg-1, 0.05 mg kg-1, 5 mg kg-1, and 5 mg kg-1.

Descriptors/Keywords: INSECT, WHEAT PEST, CONTROL, GROWTH REGULATOR, INSECTICIDE, GRAIN PRODUCTS, STORAGE, AGRIBUSINESS

Record - 1064

SANDERS, H. O. AND A. M. JULIN. 1976. EFFECTS OF TH-6040 (DIMILIN) AND THREE OF ITS METABOLITES ON AQUATIC ORGANISMS. REPORT FISH-PESTICIDE RESEARCH LABORATORY COLUMBIA, MISSOURI.

Record - 1065

SANFORD, J. W., G. R. GAUDIN, T. E. REAGAN, AND S. D. HENSLEY. 1977. COMPARISON OF BIWEEKLY GUTHION APPLICATIONS WITH 2 DOSAGE RATES OF DIMILIN APPLIED WITH OR WITHOUT SAVOL ON 1- AND 2-WEEK TREATMENT SCHEDULES FOR CONTROL OF THE SUGARCANE BORER DIATRAEA SACCHARALIS. REPRINTS USDA SCI. AND ED. ADMN..

Record - 1066

NOTE ON THE CONTROL OF SPODOPTERA LITURA LEPIDOPTERA NOCTUIDAE ON TOBACCO NICOTIANA TABACUM WITH A NUCLEAR POLYHEDROSIS VIRUS AND DIFLUBENZURON

SANTHARAM G; BALASUBRAMANIAN M

INDIAN J AGRIC SCI 50 (9). 1980. 726-727.

Full Journal Title: Indian Journal of Agricultural Sciences

Language: ENGLISH

Descriptors/Keywords: NOTE

Record - 1067

EFFECT OF DIFLUBENZURON ON THE FECUNDITY OF CERATITIS CAPITATA

SARASUA M J; SANTIAGO-ALVAREZ C

ENTOMOL EXP APPL 33 (2). 1983. 223-225.

Full Journal Title: Entomologia Experimentalis et Applicata

Language: ENGLISH

Descriptors/Keywords: REPRODUCTION, OVIPOSITOR, INTEGUMENT TREATED, DIET

Record - 1068

EFFECT OF DIFLUBENZURON ON OKRA SHOOT AND FRUIT BORER EARIAS VITTELLA
FABRICIUS

SARDANA H R; TEWARI G C

INT J TROP AGRIC 7 (1-2). 1989. 69-75.

Full Journal Title: International Journal of Tropical Agriculture

Language: ENGLISH

ABSTRACT

The morphogenetic effects of diflubenzuron against the okra shoot and fruit borer, *Earias vittella* Fabricius, were studied in the laboratory. The concentration between 250 and 1000 ppm reduced the egg hatchability by more than 50 per cent. The effectiveness of the chemical decreased with the advancing of the age of eggs. The feeding of the first instar larvae at the concentration levels of 500 ppm and above gave 100 per cent mortality, whereas the feeding of the final instar larvae resulted in the larvae-pupal intermediates. When fed through honey solution, diflubenzuron at a concentration of 1500 ppm induced complete sterility in the adult females of *E. vittella* Fab. It also resulted in the decreased oviposition reduced hatchability of eggs and lesser life span of moths.

Descriptors/Keywords: EGG HATCHABILITY, LARVA, PUPA, INSECTICIDE, MORPHOGENETIC EFFECTS, STERILITY, OVIPOSITION

Record - 1069

THE EFFECTS OF DIFLUBENZURON ON THE PUPAE OF OKRA SHOOT AND FRUIT BORER
EARIAS VITTELLA F

SARDANA H R; TEWARI G C

INT J TROP AGRIC 5 (2). 1987. 150-153.

Full Journal Title: International Journal of Tropical Agriculture

Language: ENGLISH

ABSTRACT

The effects of diflubenzuron were studied on the pupae of okra [*Abelmoschus esculentus*] shoot and fruit borer, *Earias vittella* F. The dipping of pupae in suspensions of 125 ppm or above for 30 sec caused pupal mortality, partial emergence, malformed adults and delayed adult ecdysis. The effectiveness of the chemical decreased as the age of pupae advanced.

Descriptors/Keywords: ABELMOSCHUS-ESCULENTUS, MORTALITY, MALFORMATION, DELAYED ECDYSIS

Record - 1070

SASAKI, Y. AND K. OZAKI. 1976. RESULTS OF THE CONTINUOUS SELECTION WITH DIAZINON, NAC (1-NAPHTYL N-METHYL CARBAMATE), BPMC (2-SEC BUTHYLPHENYL N-METHYL CARBAMATE) AND MIXTURE OF TWO INSECTICIDES OF 9SIC) ORGANOPHOSPHATE RESISTANT STRAIN OF SMALLER BROWN PLANTHOPPER, LAOD; BOTYU KAGAKU 41 (4): 181-185. ENG. SUMMARY.

Record - 1071

THE EFFECTS OF DIFLUBENZURON ON INVERTEBRATES AND FISHES IN A RIVER

SATAKE K N; YASUNO M

JPN J SANIT ZOOL 38 (4). 1987. 303-316.

Full Journal Title: Japanese Journal of Sanitary Zoology

Language: ENGLISH

ABSTRACT

An insect growth regulator diflubenzuron was applied to the Kokawa River [Japan] at the concentration

of 1.25 ppm for an hour to control simuliid larvae (Ogata et al., unpublished). On that occasion, the effects of the chemical on both invertebrate communities and fish were assessed. Weekly sampling of invertebrates and fish was conducted till the 4th week after the application in both treated and untreated region. Most of invertebrates were eliminated with 2 weeks, while Hydropsychidae died out gradually. Adults of Elmidae, which had not found before, appeared 1 week after in large number at the uppermost of the treated region. Fast recovery of Baetis at the same place was recognized. Downstream drifts from untreated region accounted for this result. While recolonizations by newly hatched larvae of Baetis, Chironomidae, Antocha and Simuliidae were prominent 3-4 weeks after in all the treated region. These fast recolonizers reached abnormally higher densities. On the other hand, most of caddisflies and mayflies had not recovered by the 4th weeks. Since application of diflubenzuron induces an enormous increase in target dipteran larvae including simuliids, once this chemical is used in a river, frequent applications are required subsequently. No fish mortality was observed on Phoxinus lagowski f. steindachneri and Leuciscus hakonensis. Both adults and fry of the former were commonly found during the study periods. Their condition factors increased after the application, suggesting that this species fed on attached algae which became abundant in the treated region.

Descriptors/Keywords: BAETIS, ANTOCHA, PHOXINUS-LAGOWSKI-F., STEINDACHNERI, LEUCISCUS-HAKONENSIS, DIPTERA, ELMIDAE, HYDROPSYCHIDAE, CHIRONOMIDAE, SIMULIIDAE, CADDISFLY, MAYFLY, ALGAE, LARVAE, TOXICITY, SPECIES ABUNDANCE, FEEDING, DENSITY, MORTALITY, JAPAN

Record - 1072

EMBRYONIC ABSORPTION OF LABELLED BENZOYLPHENYLUREAS AFTER PARENTAL TREATMENT IN COTTON BUG DYSDERCUS CINGULATUS F

SATYANARAYANA K; SUKUMAR K

INDIAN J EXP BIOL 29 (7). 1991. 649-651.

Full Journal Title: Indian Journal of Experimental Biology

Language: ENGLISH

ABSTRACT

Embryonic absorption of radiolabelled diflubenzuron and penfluron following treatment of adult insects revealed that the incorporation of the chemicals was maximum in the second batch of eggs while the subsequent batches of eggs exhibited a steady decline. Females receiving direct treatment of these labelled benzoylphenyl ureas transferred significant amounts to the subsequent eggs laid and that was shown by the levels of incorporation in eggs. Females which mated with treated males could not transfer much and the incorporation in those eggs was to a lesser degree. In all the treatments irrespective of the sexes, the eggs collected could be categorized into two types. The first category was the embryonated unhatched eggs and the second category was the non-embryonated unhatched eggs. Analysis of residue of eggs of both the categories showed that the eggs resulting after male-treatment had reduced incorporation of the chemical when compared to that of direct female-treatment. Between the two compounds penfluron proved 1.5 times more potent than diflubenzuron against *Dysdercus cingulatus*.

Descriptors/Keywords: DIFLUBENZURON, PENFLURON, INSECTICIDE, EMBRYONATED UNHATCHED EGG, NON-EMBRYONATED UNHATCHED EGG

Record - 1073

EFFECT OF TWO NEW CHITIN SYNTHESIS INHIBITOR COMPOUNDS ON DIFFERENT DEVELOPMENTAL STAGES OF TROGODERMA GRANARIUM EVERT

SAXENA S C; KUMAR D

J ANIM MORPHOL PHYSIOL 36 (2). 1989. 219-222.

Full Journal Title: Journal of Animal Morphology and Physiology

Language: ENGLISH

ABSTRACT

The effect of two chitin synthesis inhibitor compounds was studied on the eggs of *Trogoderma granarium*. Both the compounds, 29054 (Diflubenzuron) and 22641 (Furyl triazine) have the potentiality for use to suppress the population of *Trogoderma granarium* because the eggs treated with these compounds exhibited reduced hatching. Incubation period is enhanced by one day. Filter paper coated with compounds was more effective than petridish coated with compounds.

Descriptors/Keywords: DIFLUBENZURON, FURYL, TRIAZINE, INSECTICIDE, HATCHING REDUCTION, INCUBATION PERIOD

Record - 1074

EFFECT OF 2 CHITIN INHIBITORS ON REPRODUCTION OF TROGODERMA GRANARIUM
SAXENA S C; KUMAR V

ENTOMON 7 (2). 1982. 141-144.

Full Journal Title: Entomon

Language: ENGLISH

ABSTRACT

On application of the compounds A13-29054 and A13-63223 by topical and contact methods to adult *T. granarium*, a significant fall in oviposition was recorded. Complete sterility was noted at 20 mg/insect with both compounds following topical application. The compounds were effective in both male and female insects. The topical method was superior to contact method.

Descriptors/Keywords: STERILITY, A-13-29054, DIFLUBENZURON, A-13-63223, PENFLURON

Record - 1075

BLOCKAGE IN CHITIN BIOSYNTHETIC CHAIN IN THE GRASSHOPPER
CHROTOGONUS TRACHYPTERUS TREATED WITH DIFLUBENZURON AND PENFLURON
SAXENA S C; KUMAR V

INDIAN J EXP BIOL 19 (12). 1981. 1199-1200.

Full Journal Title: Indian Journal of Experimental Biology

Language: ENGLISH

Descriptors/Keywords: GLUCOSE, CONVERSION, FRUCTOSE, 6 PHOSPHATE

TOPICAL CONTACT METHOD

Record - 1076

SUPPRESSION OF REPRODUCTION IN *POEKILOCERUS-PICTUS* USING PENFLURON AND DIFLUBENZURON

SAXENA S C; MATHUR G

TROP PEST MANAGE 27 (4). 1981. 492-494.

Full Journal Title: Tropical Pest Management

Language: ENGLISH

ABSTRACT

Penfluron and diflubenzuron, both chitin synthesis inhibitors known to be highly effective against nymphs of *P. pictus* (F.), were tested against the adult for their possible effects upon reproduction. These compounds have the maximum effect, when no eggs were laid, if both sexes were treated. The eggs of treated males .times. untreated females did not hatch and those of treated females .times. untreated males gave rise to nymphs which died before reaching maturity.

Descriptors/Keywords: ADULT, NYMPH, CHITIN SYNTHESIS INHIBITOR, MORTALITY

Record - 1077

SCHAEFER, C. H., H. L. CLEMENT, W. H. WILDER, F. S. MULLIGAN III, AND E. F. DUPRAS JR. 1986. APPLICATION OF DIFLUBENZURON SAND GRANULES FOR CONTROLLING CULEX TARSA LIS LARVAE BREEDING UNDER MATURE COTTON STANDS. PROC. PAP. ANNU. CONF. CALIF. MOSQ. AND VECTOR CONTROL ASSN. 54TH MEETING. PP. 39-41.

Record - 1078

SCHAEFER, C. H., T. MIURA, AND W. H. WILDER. 1981. BIOLOGICAL ACTIVITIES OF TWO NEW SUBSTITUTED BENZAMIDES AGAINST MOSQUITOES AND NON-TARGET ORGANISMS. J. OF ECON. ENTOMOL. 74:658-661.

Record - 1079

OCCURRENCE OF P CHLORO ANILINE AND P CHLOROPHENYL UREA FROM THE DEGRADATION OF DIFLUBENZURON IN WATER AND FISH

SCHAEFER C H; COLWELL A E; DUPRAS E F JR

48TH MEETING, ANAHEIM, CALIF., USA, JAN. 20-23, 1980. PROC PAP ANN CONF CALIF MOSQ VECTOR CONTROL ASSOC INC 48 (0). 1980. 84-89.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: INSECTICIDE, MOSQUITO CONTROL

Record - 1080

FACTORS AFFECTING THE STABILITY OF SIR-8514 2 CHLORO-N-4-TRIFLUOROMETHOXYPHENYLAMINOCARBONYL BENZAMIDE UNDER LABORATORY AND FIELD CONDITIONS

SCHAEFER C H; DUPRAS E F JR

J AGRIC FOOD CHEM 27 (5). 1979. 1031-1034.

Full Journal Title: Journal of Agricultural and Food Chemistry

Language: ENGLISH

ABSTRACT

SIR-8514 (2-chloro-N-[[[4-(trifluoromethoxy)phenyl]amino]carbonyl]benzamide) is a potent inhibitor of mosquito larval development. Its stability in water is greatly reduced as temperature and pH both become relatively high. Its persistence is not greatly affected by sunlight. In water having a high organic matter content, its persistence seems affected by adsorption and microbial degradation. SIR-8514 is stable on vegetation under field conditions; residues on vegetation can be minimized by application of sand granule formulations. The biological and chemical properties of SIR-8514 are similar to those of diflubenzuron (2,6-difluoro-N-[[[4-chlorophenyl]amino]carbonyl]benzamide).

Descriptors/Keywords: MOSQUITO, WATER, SUN LIGHT, MICROBIAL DEGRADATION, VEGETATION, DIFLUBENZURON

Record - 1081

THE ACCUMULATION AND ELIMINATION OF DIFLUBENZURON BY FISH

SCHAEFER C H; DUPRAS E F JR; STEWART R J; DAVIDSON L W; COLWELL A E

BULL ENVIRON CONTAM TOXICOL 21 (1-2). 1979. 249-254.

Full Journal Title: Bulletin of Environmental Contamination and Toxicology

Language: ENGLISH

Descriptors/Keywords: LEPOMIS-MACROCHIRUS, POMOXIS-ANNULARIS, MOSQUITO, DDT, PARTITION COEFFICIENT, WATER SOLUBILITIES, INSECTICIDE

Record - 1082

SCHAEFER, C. H. 1978. COMPREHENSIVE EVALUATION OF MOSQUITO CONTROL AGENTS. ANNUAL REPORT OF THE UNIV. OF CALIFORNIA.

Record - 1083

SCHAEFER, C. H., T. MIURA, AND W. H. WILDER. 1978. NEW SUBSTITUTED BENZAMIDES WITH PROMISING ACTIVITY AGAINST MOSQUITOES. J. OF ECON. ENTOMOL. 71(3): 427-430.

Record - 1084

RESIDUES OF DIFLUBENZURON 1-4 CHLOROPHENYL-3-2 6-DIFLUOROBENZOYL UREA IN PASTURE SOIL VEGETATION AND WATER FOLLOWING AERIAL APPLICATIONS

SCHAEFER C H; DUPRAS E F JR

J AGRIC FOOD CHEM 25 (5). 1977 1026-1030.

Full Journal Title: Journal of Agricultural and Food Chemistry

Language: ENGLISH

ABSTRACT

Diflubenzuron [1-(4-chlorophenyl)-3-(2,6-difluorobenzoyl)urea] was applied to irrigated pastures using liquid (25% wettable powder in water) and granular (1% Attaclay and 1% sand) formulations. Multiple applications of the wettable powder produced high and long-lasting residues on vegetation; these residue levels were reduced but not eliminated using the 1% Attaclay granules. One percent sand granules achieved control of mosquito larvae and no high or persistent residues on vegetation resulted. None of these formulations caused high or persistent residues in soils.

Descriptors/Keywords: PASTURE

Record - 1085

SCHAEFER, C. H., T. MIURA, W. H. WILDER, F. S. MULLIGAN III. 1977. EVALUATION OF DIMILIN, PYDRIN, SUMITHION, RESMETHRIN, AND FENETHCARB FOR THE CONTROL OF CALIFORNIA MOSQUITOES. PROC. PA. ANNU. CONF. CALIF. MOSQ. CONTROL ASSN. 45TH PP. 146-148.

Record - 1086

SCHAEFER, C. H. AND E. F. DUPRAS JR. 1976. FACTORS AFFECTING THE STABILITY OF DIMILIN IN WATER AND THE PERSISTENCE OF DIMILIN IN FIELD WATERS (INSECTICIDES, RESIDUES). J. AGRIC. FOOD CHEM. 24(4):733-739.

Record - 1087

SCHAEFER, C. H., W. H. WILDER, F. S. MULLIGAN III. 1976. EVALUATION OF DIMILIN, BAY MEB 6046, SD41706 AND SD43775 AS MOSQUITO CONTROL AGENTS. PROC. PAP. ANNU. CONF. CALIF. MOSQ. CONTROL. ASSN. 44TH: PP. 97-99.

Record - 1088

SCHAEFER, C. H. 1974. EVALUATION OF TH-6040 FOR THE CONTROL OF MOSQUITOES, CULEX TARSALIS, AEDES NIGROMADULIS, AEDES MELANIMON. REPORT THOMPSON-HAYWARD CHEMICAL COMPANY.

Record - 1089

SCHAEFER, C. H. 1974. SUMMARY OF AIRCRAFT TRAILS WITH TH-6040 AGAINST FIELD POPULATIONS OF AEDES NIGROMACULUS AND AEDES MELANIMON ON IRRIGATED PASTURES. REPORT THOMPSON-HAYWARD CHEMICAL COMPANY NO. C3476.

Record - 1090

SCHAEFER, C. H. 1974. BIOLOGICAL ACTIVITY OF TH-6040 AGAINST ORGANISMS ASSOCIATED WITH MOSQUITO BREEDING HABITATS IN IRRIGATED PASTURES. REPORT UNIVERSITY OF CALIFORNIA, BERKELEY.

Record - 1091

SCHAEFER, C. H. 1973. SEVERAL LABORATORY STUDIES WITH DIMILIN AGAINST MOSQUITO IN PASTURES AND PONDS. REPORT THOMPSON-HAYWARD CHEMICAL COMPANY. .

Record - 1092

SCHAEFER, C. H. 1973. PAR. 1. BIOLOGICAL ACTIVITY OF TH-6040 AGAINST MOSQUITOES. REPORT UNIV. OF CALIFORNIA, BERKELEY. USA

Record - 1093

SCHIMMEL, S. C., R. L. GARNAS, J. M. PATRICK, AND J. C. MOORE. 1983. ACUTE TOXICITY, BIOCONCENTRATION AND PERSISTENCE OF AC222 705 BENTHIOCARB, CHLORPYRIFLOR, FENVALERATE, METHYLPARATHION AND PERMETHION IN THE ESTUARINE ENVIRONMENT. J. AGRIC. FOOD CHEM. 21(1): 104-113.

Record - 1094

TESTING IMMATURE LABORATORY REARED STABLE FLIES STOMOXYS CALCITRANS AND HORN FLIES HAEMATOBIA IRRITANS FOR SUSCEPTIBILITY TO INSECTICIDES

SCHMIDT C D; KUNZ S E

J ECON ENTOMOL 73 (5). 1980. 702-703.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Laboratory techniques were developed to screen insecticides for activity as larvicides against stable flies, *S. calcitrans* (L.) and horn flies, *H. irritans* (L.). With these techniques, the susceptibilities of immature, laboratory-reared stable and horn flies to selected insecticides in the larval medium were determined. For stable flies, the LC50 was lower for an IGR [insect growth regulator], diflubenzuron and an avermectin, MK 933 (at least 80% of 22,23-dihydro-5-O-demethylavermectin A1a and not more than 20% 22,23-dihydro-5-O-demethyl-25-de(1-methylpropyl)-25-(1-methylethyl)avermectin A1a), than for the other materials tested. For horn flies, the LC50 was lower for methoprene and MK 933 than for the other materials.

Descriptors/Keywords: INSECT GROWTH REGULATOR, DIFLUBENZURON, METHOPRENE, AVERMECTIN, LARVICIDE, MK-933, 22 23 DI HYDRO-5-O DEMETHYL AVERMECTIN A-1A, 22 23 DI HYDRO-5-O DEMETHYL-25-DE-1-METHYLPROPYL-25-1-METHYLETHYL AVERMECTIN A-1A, LC-50

Record - 1095

SCHOETTGER, R. A. AND W. L. MAUCH. 1978. TOXICITY OF EXPERIMENTAL FOREST INSECTICIDES TO FISH AND AQUATIC INVERTEBRATES. PROX. USA/USSR SYMP ON EFFECTS OF POLLUTANTS UPON AQUATIC ECOSYSTEMS 2:11-27.

Record - 1096

METABOLISM OF INSECT GROWTH REGULATORS IN AQUATIC ORGANISMS

SCHOOLEY D A; QUISTAD G B

KHAN, M. A. Q., J. J. LECH AND J. J. MENN (ED.). ACS (AMERICAN CHEMICAL SOCIETY) SYMPOSIUM SERIES, NO. 99. PESTICIDE AND XENOBIOTIC METABOLISM IN AQUATIC ORGANISMS; SYMPOSIUM AT THE 176TH MEETING OF THE AMERICAN CHEMICAL SOCIETY, MIAMI BEACH, FLA., USA, SEPT. 11-17, 1978. XI+436P. AMERICAN CHEMICAL SOCIETY: WASHINGTON, D.C., USA. 1979. ILLUS. ISBN 0-8412-0489-6. 0 (0). 1979. P161-176
Language: ENGLISH

Descriptors/Keywords: REVIEW, SHEEP, COW, RAT, PLANT, INSECT, MICROORGANISM, FISH, DIFLUBENZURON, R-20458, METHOPRENE, RAPID DEGRADATION, MICROSOME

Record - 1097

DIAPREPES-ABBREVIATUS FATE OF DIFLUBENZURON AND EFFECT ON NONTARGET PESTS AND BENEFICIAL SPECIES AFTER APPLICATION TO CITRUS FOR WEEVIL CONTROL

SCHROEDER W J; SUTTON R A; BEAVERS J B

J ECON ENTOMOL 73 (5). 1980. 637-638.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

When IGR [insect growth regulator] diflubenzuron, 25W [wetable] was applied aerially to a commercial citrus grove for control of *D. abbreviatus* (L.), residues in ppm on fruit harvested 27 days after the 6th application (350 g AI[active ingredient]/ha per application) were: unwashed fruit, 0.34: washed fruit, 0.11: dried pulp, 0.26; peel frit, 0.31: chopped peel, 0.12: and oil, 20.55. No detectable residue (< .05 ppm) of diflubenzuron was found in finisher pulp, fruit juice, pressed liquor, molasses, prewash or afterwash water, and emulsion water fractions. No residue (< 0.05 ppm) of 4-chlorophenylurea or 4-chloroaniline was found in any of the citrus fractions. The total sealed brood in colonies of honey bees, *Apis mellifera* L., from the check and sprayed groves was not significantly different at 7 mo. No detectable residue (< 0.05 ppm) of diflubenzuron, 4-chlorophenylurea or 4-chloroaniline was found in the honey obtained after 8 aerial sprays. Populations of nontarget citrus pests and beneficial species [*Phyllocoptruta oleivora* (Ashmead), *Eutetranychus banksi* (McGregor), fungus, scale insects, i.e., *Lepidosaphes gloveri* (Packard)] were not affected by the spray program.

Descriptors/Keywords: PHYLLOCOPTRUTA-OLEIVORA, APIS-MELLIFERA, EUTETRANYCHUS-BANKSI, LEPIDOSAPHES-GLOVERI, FUNGUS, HARVEST, PULP, PEEL, FRUIT OIL, FRUIT JUICE, HONEY, RESIDUE, 4 CHLOROPHENYL UREA, 4 CHLORO ANILINE

Record - 1098

SCHROEDER, W. 1978. DIFLUBENZURON 25W APPLIED FOR DIAPREPES ABBREVIATUS (L.), POPULATION SUPPRESSION: EFFECT ON THE NON-TARGET ARTHROPOD COMPLEX IN A FLORIDA CITRUS GROVE. UNPUBLISHED STUDY RECEIVED DEC. 15, 1978 UNDER 148-EX-25, SUBMITTED BY THOMPSON-HAYWARDE CHEMICAL CO., KANSAS CITY. KS.

Record - 1099

DIAPREPES ABBREVIATUS SUPPRESSION OF REPRODUCTIVE POTENTIAL ON CITRUS
WITH AN INSECT GROWTH REGULATOR PLUS SPRAY OIL

SCHROEDER W J; SUTTON R A

J ECON ENTOMOL 71 (1). 1978 69-70.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

The reproductive potential of *Diaprepes abbreviatus* (L.) was significantly reduced by aerial applications of diflubenzuron [N-([4-chlorophenyl]amino)carbonyl]-2,6-difluorobenzamide], 25W, plus spray oil. The diflubenzuron reduced the hatch of eggs, and the oil caused eggs to become detached from foliage. As a result, viable eggs were reduced 95, 97, 95 and 95%, respectively, for 4 consecutive wk posttreatment. A spray volume of 47 liter/ha (350 g diflubenzuron/ha in 50/50 spray oil plus water) applied by air to a bearing citrus grove was more effective than a spray volume of 9 liter/ha.

Descriptors/Keywords: DIFLUBENZURON, N-4 CHLOROPHENYLAMINOCARBONYL-2 6-DIFLUORO BENZAMIDE

Record - 1100

SCHWALBE, C. P. E. C. PASZEK, B. BIERL-LEONHARDT, AND J. R. PLIMMER. 1983. DISRUPTION OF GYPSY MOTH (LEPIDOPTERA: LYMANTRIIDAE) MATING WITH DISPARLURE J. ECON. ENTOMOL. 76:841-844.

Record - 1101

FIELD EVALUATION OF DIFLUBENZURON BOLUSES WITH AND WITHOUT FLUCYTHRINATE
EAR TAGS FOR CONTROL OF HORN FLIES HAEMATOBIA IRRITANS AND FACE FLIES
MUSCA AUTUMNALIS ON PASTURED CATTLE

SCOTT T W; MILLER R W; KNAPP F W

J AGRIC ENTOMOL 3 (2). 1986. 105-113.

Full Journal Title: Journal of Agricultural Entomology

Language: ENGLISH

ABSTRACT

We studied pastured beef cattle in Maryland and Kentucky [USA] to determine the efficacy of a diflubenzuron bolus alone and in combination with other treatments for control of face flies, *Musca autumnalis* De Geer, and horn flies, *Haematobia irritans* (L.). Cattle received one of five treatments: bolus, bolus plus flucythrinate ear tags, flucythrinate ear tags, stirofos oral larvicide, or untreated control. Boluses reduced the number of horn flies infesting cattle in Kentucky from 56% to 88%. Horn fly populations in Maryland were lower than those in Kentucky, and they were not significantly reduced by the bolus treatment. Bioassays with horn and face fly larvae showed that boluses released toxicant into feces that killed immature flies for at least 56 days. Flucythrinate ear tags were the most effective technique studied for control of horn and face flies. Horn fly populations that we studied did not appear to be resistant to synthetic pyrethroids. The potential role of a diflubenzuron bolus in integrated fly control programs is discussed.

Descriptors/Keywords: STIROFOS, ORAL LARVICIDE, SYNTHETIC PYRETHROID, MARYLAND, KENTUCKY USA

Record - 1102

SCOTT, W. P. 1977. SUPPRESSION OF BOLL WEEVILS ANTHONOMUS GRANDIS WITH DIFLUBENZURON APPLIED AT DIFFERENT RATES AND SPRAY INTERVALS (COTTON). RES. REP. MISS. AGRIC. FOR. EXP. STA. 3 (10). 3 PP.

Record - 1103

OBSERVATIONS ON POPULATION LEVELS OF THE EUROPEAN RED MITE
PANONYCHUS ULMI ACARINA TETRANYCHIDAE AND ASSOCIATED ARTHROPOD PREDATOR
COMPLEXES IN DIFFERENT SPRAY PROGRAMS OVER A 5-YEAR PERIOD

SECHSER B; THUELER P; BACHMANN A

ENVIRON ENTOMOL 13 (6). 1984. 1577-1582.

Full Journal Title: Environmental Entomology

Language: ENGLISH

ABSTRACT

Selective and nonselective insecticide and fungicide treatments were applied in season-long programs in a Swiss apple orchard, for the control of arthropod and fungal pest complexes. The effects of these treatments on *P. ulmi* (Koch) and its predators were studied over a period of 5 yr. A broad-spectrum compound, azinphos-methyl, gave good control of the codling moth, *Cydia pomonella* L., under a program of 4 to 6 sprays every 2 wk per season. Equal or slightly inferior control was given by the more selective chemicals, chlordimeform and diflubenzuron. Fungicides used were either mite-suppressive or had no effect on mite predators. Effective *P. ulmi* predation was also enhanced by the use of selective acaricides and the combined effects of a predaceous mite, *Amblyseius finlandicus* (Oudemans), and a number of beneficial insects which became established in the blocks that received the selective insecticide treatments. These beneficial arthropods kept *P. ulmi* numbers below the damage threshold, demonstrating that integrated chemical and biological control of this pest is possible.

Descriptors/Keywords: CYDIA-POMONELLA, AMBLYSEIUS-FINLANDICUS, APPLE, AZINPHOS-METHYL, CHLORDIMEFORM, DIFLUBENZURON, INSECT GROWTH REGULATOR, INSECTICIDE, FUNGICIDE, ACARICIDE, SWITZERLAND

Record - 1104

AN APPROACH TO INTEGRATED PEST MANAGEMENT FROM THE CHEMICAL INDUSTRY

SECHSER B

ACTA PHYTOPATHOL ACAD SCI HUNG 16 (1-2). 1981. 239-244.

Full Journal Title: Acta Phytopathologica Academiae Scientiarum Hungaricae

Language: ENGLISH

Descriptors/Keywords: BACILLUS-THURINGIENSIS, ANTHOCORIS-NEMORUM, CHRYSOPA-CARNEA, COCCINELLA-PUNCTATA, COCCYGOMIMUS-TURIONELLAE, AMBLYSEIUS-FALLACIS, DECIDUOUS FRUIT, MAMMALIAN TOXICITY, CHLORODIMEFORM, DIFLUBENZURON

Record - 1105

STERILIZATION OF SPODOPTERA LITTORALIS LEPIDOPTERA WITH DIFLUBENZURON AND TRIFLURON ADMINISTERED TO LARVAE

SEHNAL F; KANDIL M A; SAMMOUR E-H A

ACTA ENTOMOL BOHEMOSLOV 83 (4). 1986. 253-259.

Full Journal Title: Acta Entomologica Bohemoslovaca

Language: ENGLISH

ABSTRACT

Topical applications of 0.03 .mu.g diflubenzuron or 0.015 .mu.g trifluron per a 5th or 6th instar larva of *S. littoralis* cause about 50% mortality before imaginal emergence, and 90.1-94.8% sterility in emerged adults. The sterilizing effect is based both on a reduction of fecundity by 45.8-75% and on low egg hatchability (14.4-37% as compared to about 80% in the controls). Treatments of only male or female larvae are equally effective as the simultaneous treatments of both sexes. Applications to the 5th instar larvae are slightly more efficient than those to the 6th instar, especially in the case of trifluron.

No anatomical abnormalities, mating failures, or substantially reduced longevity were detected in the sterilized moths.

Descriptors/Keywords: EGG, INSTAR, MORTALITY, EMERGENCE, ANATOMY, MATING, LIFESPAN

Record - 1106

FIELD TRIALS WITH 2 INSECT GROWTH REGULATORS AGAINST
CULEX QUINQUEFASCIATUS

SELF L S; NELSON M J; PANT C P; USMAN S

MOSQ NEWS 38 (1). 1978 74-79.

Full Journal Title: Mosquito News

Language: ENGLISH

ABSTRACT

The insect growth regulators, diflubenzuron (= Dimilin) and methoprene (=Altosid 10F) applied at a target dosage of 1 ppm to larval habitats of *Culex quinquefasciatus* Say in a crowded section of Jakarta [Indonesia] (trial area 1 km²) were highly effective in preventing successful adult emergence for 2 and 5 wk, respectively, after 1 application. Ten days after spraying with Dimilin, tarsal abnormalities were noted in emerged adults which coincided with a preponderance of emerged males.

Descriptors/Keywords: JAKARTA INDONESIA, DIMILIN DIFLUBENZURON, ALTOSID, METHOPRENE, EMERGENCE

Record - 1107

EFFECT OF DIFLUBENZURON ON FECUNDITY AND ADULT LONGEVITY OF EPILACHNA SPARSA
HBST

SENAPATI B; PATNAIK H P

AGRIC SCI DIG 11 (2). 1991. 100-102.

Full Journal Title: Agricultural Science Digest

Language: ENGLISH

ABSTRACT

Laboratory studies showed that continuous feeding of the adult *Epilachna sparsa* with diflubenzuron treated brinjal leaves at 0.025 and 0.05% concentrations resulted in a reduction of 32.00 and 39.38% longevity in the females and 20.43 and 42.42% in the males respectively as compared to those fed with untreated leaves. The reproductive potential of the female was also decreased by 8.09 and 11.04% in the corresponding doses.

Descriptors/Keywords: BRINJAL, VEGETABLE CROP PEST, CONTROL, INSECTICIDE, REPRODUCTIVE POTENTIAL

Record - 1108

OVICIDAL AND PUPICIDAL ACTION OF DIFLUBENZURON AGAINST THE COCCINELLID
BEETLE HENOSEPIACHNA SPARSA HBST

SENAPATI B; SWAIN H B; PATNAIK H P

INDIAN J PLANT PROT 16 (2). 1988. 261-264.

Full Journal Title: Indian Journal of Plant Protection

Language: ENGLISH

Descriptors/Keywords: INSECTICIDE, TOXICITY

Record - 1109

METABOLISM OF DIFLUBENZURON BY SOIL MICROORGANISMS AND MUTAGENICITY OF THE METABOLITES

SEUFERER S L; BRAYMER H D; DUNN J J

PESTIC BIOCHEM PHYSIOL 10 (2). 1979. 174-180.

Full Journal Title: Pesticide Biochemistry and Physiology

Language: ENGLISH

ABSTRACT

Diflubenzuron [1-(4-chlorophenyl)-3-(2,6-difluorobenzoyl)urea], a new urea-based insecticide, was rapidly degraded by 4 eukaryotic microorganisms: *Fusarium* sp. *Cephalosporium* sp. *Penicillium* sp. and *Rhodotorula* sp. Cleavage of the urea bridge yielded 2,6-difluorobenzoic acid, 4-chlorophenylurea, 4-chloroaniline, 4-chloroacetanilide, acetanilide and 4-chlorophenol. Analysis of the diflubenzuron metabolites, using the *Salmonella* mutagenicity test, revealed that 2,6-difluorobenzoic acid gave a false positive at high concentrations because of its lethal effect on the test bacterium. The metabolites 4-chloroaniline, 4-chlorophenol and 4-chlorophenylurea were borderline mutagens [of potential hazard to higher animals].

Descriptors/Keywords: FUSARIUM-SP, CEPHALOSPORIUM-SP, PENICILLIUM-SP, RHODOTORULA-SP, SALMONELLA, INSECTICIDE, ANIMAL, DEGRADATION, UREA BRIDGE CLEAVAGE, 2 6 DI FLUORO BENZOIC-ACID, 4 CHLOROPHENYL UREA, 4 CHLORO ANILINE, 4 CHLORO ACETANILIDE, ACETANILIDE, 4 CHLORO PHENOL

Record - 1110

METABOLISM OF DIMILIN BY FUSARIUM-SP

SEUFERER S L; BRAYMER H D; DUNN J J

DEP. MICROBIOL., LA. STATE UNIV., BATON ROUGE, LA. 70803, USA.

USA, MAY 9-12, 1978, VA J SCI 29 (2). 1978. 109.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: ABSTRACT, SALMONELLA, MUTAGEN, INSECTICIDE

Record - 1111

EFFECT OF DIFLUBENZURON AND PENFLURON IGR'S ON THE MORPHOLOGY OF MUSCA DOMESTICA L. AND BLATTELLA GERMANICA L

SHAFI S; NAQVI S N H; ZIA N

PAK J ZOOL 19 (1). 1987. 85-90.

Full Journal Title: Pakistan Journal of Zoology

Language: ENGLISH

ABSTRACT

Morphological abnormalities produced by diflubenzuron and penfluron on different stages of *Musca domestica* L. (P.C.S.I.R. strain) and *Blattella germanica* L. (K.U. strain) were observed and abnormalities caused by both compounds were found to be significant. The larvae of most house flies failed to pupate and produced elongated larval pupal intermediates. Some of the emerged adults had deformed wings and twisted legs. In case of cockroaches, abnormal adults had less melanized and less shiny surfaced bodies. Moreover, some had swollen abdomens and their pro-thoracic regions revealed no pigmentation at all.

Descriptors/Keywords: INSECT GROWTH REGULATOR, DEVELOPMENTAL ABNORMALITIES, DISEASE VECTOR

Record - 1112

CORN FIELD ZEA-MAYS PIONEER 3147 EUROPEAN CORN BORER OSTRINIA NUBILALIS
HUEBNER FIELD CORN EUROPEAN CORN BORER CONTROL 1990

SHAMIYEH N B; SOUTHARDS C J; ROBERTS C H; ONKS D O

THOMAS, J. H. (ED.). INSECTICIDE AND ACARICIDE TESTS, VOL. 16. 327P.

ENTOMOLOGICAL SOCIETY OF AMERICA: LANHAM, MARYLAND, USA. ILLUS. PAPER. 0
(0). 1991. 171-172.

Language: ENGLISH

Descriptors/Keywords: FORCE, FORTRESS, LORSBAN, JAVELIN, POUNCE, BAYTHROID, ASANA,
LANNATE, ICIA 321 DANITOL, DIMILIN

Record - 1113

SHEA, P. J. AND S. D. SMITH. 1976. COMPARATIVE SAFETY TESTS SELECTED CHEMICALS ON NON-
TARGET ORGANISMS, 1975-1977. REPORT USDA/DFTM R & D PROGRAM-PROGRESS REPORT.

Record - 1114

CYROMAZINE RESISTANCE IN THE HOUSE FLY DIPTERA MUSCIDAE GENETICS AND
CROSS-RESISTANCE TO DIFLUBENZURON

SHEN J; PLAPP F W JR

J ECON ENTOMOL 83 (5). 1990. 1689-1697.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Larvae of a house fly, *Musca domestica* L., strain collected in a chicken house near Pittsburg, Texas [USA], after a control failure with the poultry feedthrough insecticide cyromazine showed 6.5-fold resistance to cyromazine and 10-fold resistance to diflubenzuron. Adults of the strain showed high levels of resistance to carbaryl, DDT, and diazinon; moderate resistance to cypermethrin and permethrin; and low resistance to dieldrin. In contrast, no resistance to cyromazine was observed in eight laboratory house fly strains with resistance to four groups of conventional insecticides. When the genetics of cyromazine resistance was investigated in crosses to susceptible strains with visible mutant markers, results indicated cyromazine resistance was incompletely dominant over susceptibility and the resistance gene was on chromosome V. The same or a closely linked gene conferred resistance to diflubenzuron. A strain containing only chromosome V from the original resistant strain was resistant to cyromazine and diflubenzuron, but not to other insecticides except for low level resistance to DDT and carbaryl. Resistance to the latter insecticides appeared to be due to a linked, but distinct, gene. Therefore, resistance to cyromazine, and probably diflubenzuron appears to be genetically distinct from other types of insecticide resistance.

Descriptors/Keywords: MUSCA-DOMESTICA, INSECT GROWTH REGULATOR, INSECTICIDE,
CARBARYL, DDT DIAZINON, CYPERMETHRIN, PERMETHRIN, DIELDRIN, PESTICIDE, TEXAS,
USA

Record - 1115

INTEGRATED CONTROL OF HOUSE FLIES MUSCA DOMESTICA ON POULTRY FARMS
TREATMENT OF HOUSE FLY RESTING SURFACES WITH DIFLUBENZURON PLUS RELEASES OF THE
PARASITOID MUSCIDIFURAX RAPTOR

SHEPARD M; KISSAM J B

J GA ENTOMOL SOC 16 (2). 1981. 222-227.

Full Journal Title: Journal of the Georgia Entomological Society

Language: ENGLISH

ABSTRACT

An integrated control program against houseflies, *M. domestica* L., was compared with methods using more conventional chemical insecticides. The integrated approach utilized diflubenzuron (Dimilin) applied to housefly resting surfaces along with releases of the housefly parasitoid, *Muscidifurax* raptor Giralt and Sanders. There was a significant ($P < 0.05$) reduction in the number of house flies, as measured by speck cards, on the poultry farm where diflubenzuron was applied to housefly resting surfaces and releases of the parasitoids were made. Housefly pupal deformities reached over 60% in the diflubenzuron-treated poultry houses.

Descriptors/Keywords: DIMILIN, DEFORMITY

Record - 1116

SHIH, C. T. 1979. PRIMOPHOS-ETHYL AND DIFLUBENZURON FOR CONTROL OF CECID FLIES *HETEROPEZA PYGMAEA* WINNERTZ IN CULTIVATED MUSHROOM. T'AI-WAN YANG KU. (TAIWAN MUSHROOMS) 3(3): 45-50.

Record - 1117

SHINHOLSER, J. 1975. DIMILIN EVALUATION FOR MOSQUITO LARVAE CONTROL. REPORT THOMPSON-HAYWARD CHEMICAL COMPANY.

Record - 1118

SIECK, R., D. GUSTAFSON, AND S. KULCZYK, ET AL. 1976. FATE OF DIMILIN FOLLOWING APPLICATION TO SOYBEANS ADC PROJECT #222. UNPUBLISHED STUDY RECEIVED JUN. 19, 1976 UNDER 148-1262. PREPARED BY ANALYTICAL DEVELOPMENT CORP. SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO.

Record - 1119

SIECK, R. F. 1976. RESIDUES OF TH-6040 EQUIVALENTS IN COTTON AND ROTATIONAL CROPS FOLLOWING FOLIAR APPLICATION. UNPUBLISHED STUDY INCLUDING LETTER DATED JAN. 29, 1976 FROM R. F. SIECK TO DONALD NYE, RECEIVED FEB. 10, 1976 UNDER 6G1744; PREPARED BY ANALYTICAL DEVELOPMENT CORP., SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO.

Record - 1120

SIMMON, G. A. 1975. THE EFFECTS OF TH-6040 ON THE PARASITIDS OF THE SPRUCE BUDWORM AND ON NON-TARGET ARTHROPODS IN MAINE, 1975. UNPUBLISHED STUDY RECEIVED FEB. 10, 1976 UNDER 6G1744; PREPARED BY UNIV. OF MAINE, DEPT. OF ENTOMOLOGY, SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 1121

EFFICACY OF DIFLUBENZURON ALONE AND IN COMBINATION WITH INSECTICIDES FOR CONTROL OF BOLLWORMS ON DIFFERENT VARIETIES OF UPLAND COTTON *GOSSYPIUM HIRSUTUM*

SIMWAT G S; DHAWAN A K

INDIAN J AGRIC SCI 62 (6). 1992. 424-426.

Full Journal Title: Indian Journal of Agricultural Sciences

Language: ENGLISH

Descriptors/Keywords: PECTINOPHORA-GOSSYPIELLA, EARIAS-VITELLA, EARIAS-INSULANA, INSECT PESTS, PHENTHOATE, ENDOSULFAN, CROP INDUSTRY, AGRICULTURE

Record - 1122

SINEGRE, G., J. L. JULLIEN, B. GAVEN, AND O. CRESPO. 1980. LARVICIDE AND OVICIDE EFFECTS OF DIFLUBENZURON OF THREE SPECIES OF CULICIDAE: (CULEX PIPIENS, AEDES CASPIUS, AEDES AEGYPTI). PARASSITOLOGIA 22: 187-198.

Record - 1123

HPLC DETERMINATION OF DIFLUBENZURON RESIDUES ON CABBAGE UNDER SUB-TROPICAL FIELD CONDITIONS

SINGH P; SINGH B; CHAHAL K K; KALRA R L

J INSECT SCI 4 (2). 1991. 182-184.

Language: ENGLISH

ABSTRACT

Following the application of diflubenzuron as Dimilin 25% WP on cabbage crop @ 75 and 150 g a.i./ha, the maximum initial deposits were 1.86 and 3.50 mg/kg respectively. These residues declined below the Codex maximum residue limit of 1 mg/kg after 3 and 5 days respectively. Thus, at the dose effective for the control of *Plutella xylostella* (L.), i.e. 75 g a.i./ha, the farmers can market their produce after observing a waiting period of 3 days.

Descriptors/Keywords: PLUTELLA-XYLOSTELLA, INSECTICIDE, HIGH PERFORMANCE LIQUID CHROMATOGRAPHY

Record - 1124

DETERMINATION OF DIFLUBENZURON RESIDUES BY THIN-LAYER CHROMATOGRAPHY

SINGH P P; KALRA R L

CHROMATOGRAPHIA 27 (1-2). 1989. 53-54.

Full Journal Title: Chromatographia

Language: ENGLISH

ABSTRACT

A TLC method using silver nitrate incorporated in alumina G coated glass plates as a chromogenic reagent was developed for the estimation of diflubenzuron. The sensitivity of this technique for diflubenzuron was 0.1 .mu.g and its residues in water down to 0.002 .mu.g g-1 could be determined. Considering simplicity and low cost, this newly standardized TLC procedure compares favourably with available HPLC methods.

Descriptors/Keywords: INSECTICIDE

Record - 1125

STUDIES ON THE TOXICITY OF INSECTICIDAL DRIFT TO THE FIRST INSTAR LARVAE OF THE LARGE WHITE BUTTERFLY PIERIS BRASSICAE LEPIDOPTERA PIERIDAE

SINHA S N; LAKHANI K H; DAVIS B N K

ANN APPL BIOL 116 (1). 1990. 27-42.

Full Journal Title: Annals of Applied Biology

Language: ENGLISH

ABSTRACT

The toxicity (LD50) of eight insecticides to 2-day-old first instar larvae of *Pieris brassicae* was determined by topical application. On the basis, the insecticides could be ranked in ascending order viz. dimethoate < pirimicarb < phosalone < endosulfan < fenitrothion < pirimiphos-methyl < fenvalerate < diflubenzuron. Relative to endosulfan, dimethoate and pirimicarb were 30-25 times less toxic while at the other extreme, fenvalerate (.times. 12) and diflubenzuron (.times. 26) were much more

toxic to the larvae of *P. brassicae*. A methodology was developed for examining the effects of spray drift through bioassay using these 2-day-old larvae. Six field trials with commercial formulations were carried out in which variables other than the insecticide and wind speed were held constant as far as possible. Phosalone (700 g active ingredient ha⁻¹) produced no effect beyond 1 m downwind at low wind speed (2 m s⁻¹); at high wind speed (4 m s⁻¹), larvae mortality (5.3%) was recorded up to 2m. Fenitrothion (1050 g a.i. ha⁻¹) at moderate wind speed (3 m s⁻¹) caused mortality up to 4 m while fenvalerate (30 g a.i. ha⁻¹) at the same wind speed affected larvae up to a distance of 8 m. Diflubenzuron at a very low dosage (6.5 g a.i. ha⁻¹) also produced effects up to 8 m. At the maximum approved dosage (100 g a.i. ha⁻¹), and at high wind speed (4.25 m s⁻¹), diflubenzuron killed 8.4% of the larvae at 16 m distance. At wind speed of 2-3.5 m s⁻¹, spray deposits on the upper surfaces of water sensitive papers were high at 0 m and declined exponentially with distance. At higher wind speeds (4-4.25 m s⁻¹) turbulence produced irregular deposits. Deposition on lower surfaces was much lower than on upper surfaces but the trends with distance and wind speed were the same. The exponential relationships between mortality and distance, and drift deposition and distance, were examined. The results are discussed with respect to laboratory toxicities, application rates, wind speeds and ecological factors.

Descriptors/Keywords: INSECT, DIMETHOATE, PIRIMICARB, PHOSALONE, ENDOSULFAN, FENITROTHION, PIRIMIPHOS-METHYL, FENVALERATE, DIFLUBENZURON

Record - 1126

DIFLUBENZURON AND NEEM AZADIRACHTA INDICA OIL IN CONTROL OF HELIOTHIS ARMIGERA INFESTING CHICKPEA CICER ARIETINUM

SINHA S N; MEHROTRA K N

INDIAN J AGRIC SCI 58 (3). 1988. 238-239.

Full Journal Title: Indian Journal of Agricultural Sciences

Language: ENGLISH

Descriptors/Keywords: CHITIN, INHIBITOR, PESTS, CROP INDUSTRY, AGRICULTURE

Record - 1127

EFFICACY OF DIFLUBENZURON AND NEEM SEED KERNEL SUSPENSION AGAINST THE TOBACCO CATERPILLAR SPODOPTERA LITURA IN TOBACCO NURSERIES

SITARAMAIAH S; RAMAPRASAD G; JOSHI B G

PHYTOPARASITICA 14 (4). 1986 . 265-272.

Full Journal Title: Phytoparasitica

Language: ENGLISH

ABSTRACT

Nursery tests showed that aqueous sprays of a 25% diflubenzuron (DFB) W.P. at 0.007%, 0.009%, 0.011% and 0.013% a.i., a 2% neem seed kernel suspension (NSKS) in water and a combination of 1% NSKS plus 0.0035% DFB protected tobacco seedlings from tobacco caterpillar (*Spodoptera litura* [F.]) damage up to 9 days after spraying. Weekly treatments in a bulk nursery with 0.009% DFB and 2% NSKS commencing 4 weeks after germination and continued for 7 weeks, offered significant protection and significantly reduced *S. litura* larval population compared with an unprotected nursery.

Descriptors/Keywords: LARVAL POPULATION, INSECTICIDE

Record - 1128

SMALLEY, H. E. 1976. COMPARATIVE TOXICOLOGY OF SOME INSECT GROWTH REGULATORS. CLIN. TOXICOL. 9 (1): 27-28.

Record - 1129

SMITH J. T. AND C. P EDMUNDS. 1985. ENVIRONMENTAL MONITORING OF THE 1984 GYPSY MOTH CONTROL PROGRAM IN TENNESSEE. REPORT DUPHAR B. V. NO. 56637/27/1985.

Record - 1130

FIELD EVALUATIONS OF DIFLUBENZURON AND TRIFLUMURON FOR CONTROL OF THE RICE WATER WEEVIL IN CALIFORNIA USA RICE FIELDS

SMITH K A; GRIGARICK A A; ORAZE M J

J AGRIC ENTOMOL 5 (2). 1988. 121-126.

Full Journal Title: Journal of Agricultural Entomology

Language: ENGLISH

ABSTRACT

Two benzoylphenyl ureas (diflubenzuron and triflumuron) were evaluated at different rates and times of application in a 3 year field study to determine effectiveness in controlling natural populations of the rice water weevil, *Lissorhoptrus oryzophilus* Kuschel. Application timing was based on the number of days beyond ca. 50% mean rice emergence from the water surface in a continuously flooded field (ca. 10 cm depth). The chemicals were applied as single applications at 4, 5, and 7 days and as double applications at 4 and 10 days, and 7 and 14 days post rice emergence respectively. Three rates were tested: 0.14, 0.28, and 0.42 kg (AI)/ha. Both compounds caused significant reduction in immature weevil populations when applied at 0.28 kg (AI)/ha, 4 to 5 days following rice emergence in a continuously flooded field.

Descriptors/Keywords: LISSORHOPTRUS-ORYZOPHILUS, CHITIN SYNTHESIS INHIBITORS, FIELD TEST, PESTICIDE

Record - 1131

SMITH, K. A., A. A. GRIGARICK, J. H. LYNCH, AND M. J. ORAZE. 1985. EFFECT OF ALSYSTIN AND DIFLUBENZURON ON THE RICE WATER WEEVIL. (COLEOPTERA: CURCULIONIDAE). J. OF ECON. ENTOMOL. 78(1):185-189.

Record -1132

SMITH K. S. 1976. TH-6040 TISSUE RESIDUE AND METABOLISM STUDY IN DAIRY COWS: LABORATORY NO. 5E-7372. UNPUBLISHED STUDY RECEIVED DEC. 23, 1976 UNDER 148-1258; PREPARED BY CANNON LABORATORIES, INC., SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO.

Record - 1133

SMITH K. S. 1976. TH-6040 TISSUE RESIDUE AND METABOLISM STUDY IN POULTRY: LABORATORY NO., 5E-7372. UNPUBLISHED STUDY RECEIVED APR. 7, 1976 UNDER 148-1259; PREPARED BY CANNON LABORATORIES, INC., SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO.

Record -1134

SMITH, K. S. 1976. TH-6040. TISSUE RESIDUE AND METABOLISM: STUDY IN POULTRY: LABORATORY NO. 5E7372. UNPUBLISHED STUDY RECEIVED JULY 19, 1976 UNDER 148-1262. PREPARED BY CANNON LABORATORIES, INC., SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO.

Record - 1135

SMITH, K. S. 1975. TH-6040 EGG AND TISSUE RESIDUE STUDY IN POULTRY: LABORATORY NO. 5E-7373. UNPUBLISHED STUDY RECEIVED FEB. 10, 1976 UNDER 6G1744; PREPARED BY CANON LABORATORIES, INC., SUBMITTED BY THOMPSON HAYWARD CHEMICAL CO.

Record - 1136

SMITH K, S. AND D. L. MERRICKS. 1975. ISOLATION, PURIFICATION AND IDENTIFICATION OF TH-6040 AND ITS METABOLITES FROM THE LIVER OF A COW EXPOSED TO 14C-TH-6040: LABORATORY NO. 5E-7372 B. UNPUBLISHED STUDY RECEIVED FEB. 10, 1976 UNDER 6G1744. PREPARED BY CANNON LABORATORIES, INC., SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO.

Record -1137

SMITH, K. S. 1975. TH-6040 MILK AND TISSUE RESIDUE STUDY IN DAIRY COWS: LABORATORY NO., 5E-7372. UNPUBLISHED STUDY RECEIVED FEB. 10, 1976 UNDER 6F1744; PREPARED BY CANNON LABORATORIES, INC. SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO.

Record - 1138

EFFICACY OF SELECTED INSECTICIDES AGAINST LIRIOMYZA TRIFOLII DIPTERA
AGROMYZIDAE A LEAFMINER OF CHRYSANTHEMUM

SMITH R F

CAN ENTOMOL 118 (8). 1986. 761-766.

Full Journal Title: Canadian Entomologist

Language: ENGLISH

ABSTRACT

Cyromazine was effective in controlling *Liriomyza trifolii* (Burgess) (Diptera: Agromyzidae) larvae within chrysanthemum leaves. Ovipositor puncturing was not deterred by this larvicide. Adult emergence was inhibited when 3rd-instar larvae were exposed to cyromazine. Reduced dosages of 0.003, 0.030, and 0.300 g AI/L did not inhibit initiation of mines, but at the highest rate caused significant mortality. Diflubenzuron reduced *L. trifolii* ovipositor punctures but did not cause larval mortality. Methomyl applied at 0.5 mL/L gave significant control of larvae. Neither larvicide proved phytotoxic to a range of cultivars tested in a commercial greenhouse. Aldicarb applied to the soil at rates ranging from 28.8 to 575.0 g AI/100 m² was found effective against *L. trifolii* larvae but severe phytotoxicity resulted from single applications at the two highest rates. Ovipositor punctures were not reduced as treatment rates increased, but oviposition tended to diminish in response to dosage. Complete leafminer control from a single application would require a highly phytotoxic dosage.

Descriptors/Keywords: OVIPOSITION, PHYTOTOXICITY, CYROMAZINE, DIFLUBENZURON, ALDICARB, LARVICIDE, MORTALITY

Record - 1139

ELECTRON CAPTURE GAS CHROMATOGRAPHIC DETERMINATION OF DIFLUBENZURON AND PERMETHRIN IN SOIL AND WATER

SMITH S; WILLIS G H; MCDOWELL L L

J AGRIC FOOD CHEM 31 (3). 1983. 610-612.

Full Journal Title: Journal of Agricultural and Food Chemistry

Language: ENGLISH

ABSTRACT

An electron-capture gas chromatographic method was described for the determination of diflubenzuron [insecticide] in the presence of permethrin in soil, water and agricultural runoff. Diflubenzuron was derivatized to N-(4-chlorophenyl)-trifluoroacetamide by using trifluoroacetic anhydride with trimethylamine as a catalyst. Permethrin remained unchanged by the derivatization reaction. Mean

recoveries for soil and water at 2 fortification levels were 87, 92 and 94% for diflubenzuron, cis-permethrin and trans-permethrin, respectively.

Descriptors/Keywords: AGRICULTURAL RUNOFF, SOIL POLLUTION, WATER POLLUTION, INSECTICIDE

Record - 1140

SMUCKER, R. A. 1988. "ENVIRONMENTAL RESIDUES OF DIMILIN AS A CONSEQUENCE OF AERIAL SPRAYING FOR GYPSY MOTH CONTROL MDA REF MDA-606-FY87, CEES REF 07-4-30115, GYPSY MOTH CONTROL 50 HARRY S. TRUMAN PARKWAY, MARYLAND DEPT. OF AG. ANNAPOLIS, MD 21401.

Record - 1141

SOME EFFECTS OF DIFLUBENZURON ON GROWTH AND SPOROGENESIS IN
STREPTOMYCES-SPP

SMUCKER R A; SIMON S L

APPL ENVIRON MICROBIOL 51 (1). 1986. 25-31.

Full Journal Title: Applied and Environmental Microbiology

Language: ENGLISH

ABSTRACT

Diflubenzuron, an insect growth regulator that blocks chitin deposition in insect cuticles, was tested for its effects on morphogenesis of *Streptomyces* spp. Use of diflubenzuron resulted in reduced dominance of spore hairs, reduced the width of the outer wall, and prevented formation of the inner spore wall in *S. bambergiensis*. In *S. coelicolor*, diflubenzuron altered the structure of the fibrillar pattern of spore envelopes. Exposure to diflubenzuron resulted in small increases in exported protein and in a ca. 20% increase in chitinase in both *Streptomyces* spp.

Descriptors/Keywords: INSECTICIDE, MORPHOGENESIS, SPORE ENVELOPES, PROTEIN, CHITINASE, STREPTOMYCES-COELICOLOR, STREPTOMYCES-BAMBERGIENSIS

Record - 1142

SOBCHAK, M. N., S. A. ROSLAVTSEVA, AND S. A. ZHURAVSKAYA. 1984. TOXICITY OF DIFLUBENZURON FOR NOCTUIDAE MOTHS, PESTS OF COTTON. *KHIMIYA V SEL'SKOM KHOZIAISTVE*. 1984 (2): 26-29.

Record - 1143

RESIDUAL INFLUENCE OF DIMILIN AND BACTOSPAIN ON THE BIO-EFFICACY OF CERTAIN SYNTHETIC PYRETHROIDS AGAINST THE COTTON LEAFWORM
SPODOPTERA LITTORALIS

SOBEIHA A M K; ZIDAN Z H; MAHMOUD F A; TANTAWY S

BULL ENTOMOL SOC EGYPT ECON SER 0 (12). 1980-1981 (1984). 165-170.

Full Journal Title: Bulletin of the Entomological Society of Egypt Economic Series

Language: ENGLISH

ABSTRACT

Laboratory-field experiments were carried out to estimate the residual bioefficacy of the synthetic pyrethroids: namely sumicidin, meothrin and ripcord as affected by dimilin and bactospain against the cotton leafworm larvae. Data indicate that all treatments except dimilin when used alone caused 100% initial kill on the 4th instar larvae; dimilin gave only 36% mortality. No considerable loss in efficacy was occurred within the period of 3-9 days from spraying sumicidin, meothrin and ripcord alone. Also, dimilin mixtures with the tested pyrethroids did not show any potentiality. Meothrin when mixed with

dimilin added a slight effect. No synergistic effects were obtained concerning the residual bio-efficacy on leafworm larvae when pyrethroids were mixed with bactospeine.

Descriptors/Keywords: SUMICIDIN, MEOTHRIN, RIPCORD, INSECT GROWTH REGULATOR, MORTALITY

Record - 1144

SOL, R. 1985. DIFLUBENZURON (DIMILIN 25WP) FOR THE CONTROL OF THE BLACK VINE WEEVIL (*OTIORHYNCHUS SULCATUS* F. (COLEOPTERA: CURCULIONIDAE)). MEDEDELINGEN VAN DE FACULTEIT LANDBOUWWETENSCHAPPEN RIJKSUNIVERSITEIT. 50 (2): 457-461.

Record - 1145

CONTROL OF THE PEAR PSYLLID *CACOPSYLLA PYRICOLA* IN SOUTH EAST ENGLAND UK BY PREDATORS AND PESTICIDES

SOLOMON M G; CRANHAM J E; EASTERBROOK M A; FITZGERALD J D

CROP PROT 8 (3). 1989. 197-205.

Full Journal Title: Crop Protection

Language: ENGLISH

ABSTRACT

The pear psyllid, *Cacopsylla pyricola*, is an important pest on pear in England. In orchard trials in Kent, *Anthocoris nemoralis* usually prevented the psyllid from increasing to high densities, provided that the pesticides applied were not damaging to the predator. Only small numbers of *A. nemoralis* appeared to overwinter on the pear trees, and synthetic pyrethroid insecticides used at the 'bud burst' stage, before colonization by the predators, did not disrupt regulation of the psyllid by *A. nemoralis*, and were very effective at reducing psyllid numbers. The broad-spectrum pesticides were very damaging to predator populations if used later in the season, generally resulting in an upsurge of psyllid populations. Of the more selective materials tested for post-blossom use, amitraz was the most effective against psyllids, and was not damaging to predatory anthocorids. Diflubenzuron was also effective against psyllids, although slower acting, and caused only slight reduction in anthocorid density. Chemical control of scab and, when necessary, of mite, aphid and lepidopterous pests, can be compatible with the preservation of *A. nemoralis*; this is the basis of integrated pest management on pear.

Descriptors/Keywords: BIOLOGICAL CONTROL, AMITRAZ, DIFLUBENZURON, INSECTICIDE, INTEGRATED PEST MANAGEMENT

Record - 1146

DIFLUBENZURON AND OOGENESIS IN THE CODLING MOTH *CYDIA POMONELLA* L

SOLTANI N; SOLTANI-MAZOUNI N

PESTIC SCI 34 (3). 1992. 257-261.

Full Journal Title: Pesticide Science

Language: ENGLISH

ABSTRACT

Diflubenzuron, topically applied (0.5 .mu.g insect-1) to *Cydia pomonella*(L.) at pupal ecdysis disturbed growth and development of oocytes. It delayed the adult ecdysis and caused a decrease in both thickness of the follicular epithelium and the size of the basal oocyte during the pupal development. On the other hand, the size of basal oocytes, the protein content per ovary and the number of oocytes per ovary recorded in newly emerged adults were significantly reduced after diflubenzuron treatment. These results, together with observations in several other species, indicate that the reduction in fecundity and egg viability is probably due to interference of diflubenzuron with the vitellogenesis process.

Descriptors/Keywords: INSECT PEST CONTROL, INSECTICIDE, VITELLOGENESIS PROCESS,

REPRODUCTIVE, TOXICITY, REDUCED FECUNDITY

Record - 1147

STAGE-SPECIFIC EFFECTS OF DIFLUBENZURON ON ECDYSTEROID TITERS DURING THE DEVELOPMENT OF TENEBRIO MOLITOR EVIDENCE FOR A CHANGE IN HORMONAL SOURCE

SOLTANI N; DELACHAMBRE J; DELBECQUE J P

GEN COMP ENDOCRINOL 76 (3). 1989. 350-356.

Full Journal Title: General and Comparative Endocrinology

Language: ENGLISH

ABSTRACT

The effects of the insect growth regulator diflubenzuron (DFB) were observed on the larval-larval and larval-pupal moulting cycles of *T. molitor*, after treatment at ecdysis. In both cases, the first parts of the cycles, from ecdysis to apolysis, were apparently not affected, but the pharate periods were lengthened; treated animals were generally unable to perform ecdysis and died at this step. The ecdysteroid titers in the hemolymph of treated animals were measured with a radioimmunoassay and compared to controls. During larval-larval cycles, the single ecdysteroid increase was not affected by DFB treatment. On the contrary, during larval-pupal development, a significant modification was observed; whereas two ecdysteroid peaks occurred in controls, the second peak of treated animals was significantly reduced and slightly delayed; however, the first peak was not modified. Taking into account that previous observations demonstrated a complete inhibition of the ecdysteroid peak in *Tenebrio* pupae, these stage-specific differences could reveal either a change in the DFB sensitivity of a sole endocrine source (i.e., prothoracic gland) or a change in hormone origin during metamorphosis. Ligation experiments during the last larval stage, in combination or not with DFB applications, clearly demonstrated the change in the moulting hormone source at the end of larval development in *Tenebrio*.

Descriptors/Keywords: LARVA, PUPA, MOLTING CYCLE, ECDYSIS, METAMORPHOSIS, INSECT GROWTH REGULATOR

Record - 1148

DIFLUBENZURON-INDUCED ALTERATIONS DURING IN-VITRO DEVELOPMENT OF TENEBRIO MOLITOR PUPAL INTEGUMENT

SOLTANI N; QUENNEDEY Q; DELBECQUE J P; DELACHAMBRE J

ARCH INSECT BIOCHEM PHYSIOL 5 (3). 1987. 201-210.

Full Journal Title: Archives of Insect Biochemistry and Physiology

Language: ENGLISH

ABSTRACT

The effects of diflubenzuron (DFB) in *Tenebrio molitor* pupae were first investigated on cuticle secretion induced by 20-hydroxyecdysone in vitro. The sternal integuments were treated by DFB either 3 days before culture or during culture. DFB, when applied before culture, did not prevent the molting hormone from inducing a new cuticle deposition by integument explants in vitro. However, this cuticle showed several architectural alterations and a thickness reduction. When applied during the culture in the presence of 20-hydroxyecdysone, DFB at high dose (.gtoreq. 20 .mu.g/ml) was able to inhibit cuticle secretion, but lower doses (.ltoreq. 10 .mu.g/ml) resulted in epicuticle deposition. These observations confirm in vivo studies showing antagonistic effects of DFB and ecdysteroids at the level of epidermal cells. In another series of experiments, the DFB effects were analyzed without addition of exogenous molting hormone in vitro. Because it had been observed in previous studies that pupal epidermal explants of *Tenebrio* secrete low but significant amounts of ecdysteroids in the culture medium, this in vitro secretion was measured by radioimmunoassay after DFB treatment. It was observed that DFB, when applied either before or during culture, significantly reduced the hormonal secretion in vitro. This reduction, observed at the level of epidermal cells, could be homologous with the diminution of the endogenous ecdysteroid peak previously described after in vivo DFB treatment in *Tenebrio* pupae.

Descriptors/Keywords: CUTICLE SECRETION, MOLTING, INSECT GROWTH REGULATOR, 20 HYDROXYECDYSONE, ECDYSTEROID, ULTRASTRUCTURE, RADIOIMMUNOASSAY

Record - I149

EFFECTS OF INGESTED DIFLUBENZURON ON THE LONGEVITY AND THE PERITROPHIC MEMBRANE OF ADULT MEALWORMS TENEbrio MOLITOR

SOLTANI N

PESTIC SCI 15 (3). 1984. 221-225.

Full Journal Title: Pesticide Science

Language: ENGLISH

ABSTRACT

When fed to adults of *T. molitor*, diflubenzuron reduced the longevity, the weight of the adults and the thickness of the post-ecdysial adult cuticle. It also affected the production of the peritrophic membrane. The loss of weight and the decrease of longevity of the treated adults may have been because of alterations to the peritrophic membrane, caused by the inhibition of chitin biosynthesis by diflubenzuron.

Descriptors/Keywords: INSECT GROWTH REGULATOR, CHITIN SYNTHESIS INHIBITOR

Record - I150

EFFECTS OF DIFLUBENZURON ON THE PUPAL ADULT DEVELOPMENT OF TENEbrio MOLITOR COLEOPTERA TENEBRIONIDAE GROWTH AND DEVELOPMENT CUTICLE SECRETION EPIDERMAL CELL DENSITY AND DNA SYNTHESIS

SOLTANI N; BESSON M T; DELACHAMBRE J

PESTIC BIOCHEM PHYSIOL 21 (2). 1984. 256-264.

Full Journal Title: Pesticide Biochemistry and Physiology

Language: ENGLISH

ABSTRACT

Diflubenzuron (DFB), applied by dipping newly emerged pupae of *T. molitor* L., disturbs the pupal-adult development. Four main types of treated insects were obtained according to external morphology: blocked pupae, adults unable to ecdyse, adults partially ecdysed, and adults completely ecdysed. The proportion of these 4 types varied with the time of treatment during the pupal life. When DFB was administered by dipping at a 10 g/liter concentration to newly emerged pupae, HPLC [high performance liquid chromatography] measurements showed that the different responses were due to a difference in the levels actually incorporated. Histological and ultrastructural observations of sternal cuticles revealed that DFB disturbs the cuticle deposition: reduction of its thickness and modifications of its architecture. Tritiated thymidine incorporation and cell density measurements in sternal epidermis show that DFB affects both mitoses and DNA synthesis in blocked pupae. DFB probably interferes with other biochemical processes besides the chitin biosynthesis; whether these effects are primary or secondary remain to be determined.

Descriptors/Keywords: MITOSIS, CHITIN, BIOSYNTHESIS, INSECT GROWTH REGULATOR, RADIO LABEL CHROMATOGRAPHY

Record - I151

INHIBITION OF ECDYSTEROID INCREASE BY DIFLUBENZURON IN TENEbrio MOLITOR PUPAE AND COMPENSATION OF DIFLUBENZURON EFFECT ON CUTICLE SECRETION BY 20 HYDROXYECDYSONE

SOLTANI N; DELBECQUE J P; DELACHAMBRE J; MAUCHAMP B

INT J INVERTEBR REPROD DEV 7 (6). 1984. 323-332.

Full Journal Title: International Journal of Invertebrate Reproduction and Development

Language: ENGLISH

ABSTRACT

Dipping newly ecdysed *T. molitor* pupae in an acetone solution of diflubenzuron prevents most of them (73%) from carrying on further development. Such blocked animals cannot secrete adult cuticle and remain apolysed. Their ecdysteroid levels analyzed by radioimmunoassay do not present any increase. Injection of 20-hydroxyecdysone (2-10 μ g) several days after diflubenzuron application allows the secretion of a new cuticle with an abnormal architecture but with a high N-acetyl-aminosugars content as revealed by fluorescent wheat germ agglutinin.

Descriptors/Keywords: METABOLIC-DRUG, RADIOIMMUNOASSAY

Record - 1152

PENETRATION AND INSECTICIDAL ACTIVITY OF DIFLUBENZURON IN
TENEBRIO MOLITOR PUPAE

SOLTANI N; DELBECQUE J-P; DELACHAMBRE J

PESTIC SCI 14 (6). 1983. 615-622.

Full Journal Title: Pesticide Science

Language: ENGLISH

ABSTRACT

Diflubenzuron was effective on the pupae of *T. molitor* L. (Coleoptera, Tenebrionidae) when applied topically, by dipping, or by injection. Death occurred before or at adult ecdysis, or during the 1st few days after emergence. Its effectiveness decreases with increasing age of the pupa. Diflubenzuron delays adult ecdysis and decreases the longevity of normally ecdysed adults. After diflubenzuron was applied topically or by dipping, the compound was determined, on the pupal cuticle, in the body and on the rearing tray, by high-performance liquid chromatography. Diflubenzuron penetrated rapidly into the body and was not degraded during the pupal life. The level of incorporation of the insecticide, in dipping experiments on pupae at the same stage, varied from one individual to another. The mean amount of insecticide incorporated was lower after dipping of older pupae than of younger pupae. The lower efficacy of diflubenzuron on older pupae may be caused by the decrease both in the permeability of the cuticle and in the sensitivity of the target cells.

Descriptors/Keywords: CUTICULAR PERMEABILITY, LONGEVITY, ECDYSIS
CHROMATOGRAPHY

Record - 1153

IMPACT OF CHITIN SYNTHESIS INHIBITOR DIFLUBENZURON ON THE FEEDING
PHYSIOLOGY OF PAPILIO DEMOLEUS LEPIDOPTERA PAPILIONIDAE

SOMASUNDARAM P; CHOCKALINGAM S

INSECT SCI APPL 9 (5). 1988. 613-616.

Full Journal Title: Insect Science and its Application

Language: ENGLISH

ABSTRACT

The effect of topical application and oral administration of diflubenzuron on the feeding budget in the fifth instar larva of *Papilio demoleus* has been studied. The LD₅₀ and LC₅₀ values of diflubenzuron were 13.50 and 9.00 μ g/larva/48 hr respectively. Topical application was found more efficacious in producing 50% mortality at a comparatively minimum dose of 9.00 μ g. The growth efficiency was reduced by 44.54% in oral administration and 38.19% in topical application at the highest sublethal dose over that of control larvae. Not only the growth of the larvae of *P. demoleus* was inhibited, but the adults showed morphological deformities.

Descriptors/Keywords: INSTAR, LARVA, MORPHOLOGICAL DEFORMITY, MORTALITY,
TOPICAL APPLICATION, ORAL ADMINISTRATION, INSECT GROWTH REGULATOR

Record - 1154

EFFECT OF DIFLUBENZURON ON THE MORTALITY OF MIDDLE AGE LARVAE OF
TRIBOLIUM CONFUSUM AND TRIBOLIUM CASTANEUM

SOSHKIN D V

IZV TIMIRYAZEV S-KH AKAD 0 (4). 1991. 174-176.

Full Journal Title: Izvestiya Timiryazevskoi Sel'skokhozyaistvennoi Akademii

Language: RUSSIAN

ABSTRACT

LD50 of difluorinebenzuron in fodder for 20-day larvae of *T. confusum* and *T. castaneum* was established.

Record - 1155

RESIDUES OF DIFLUBENZURON APPLIED TOPICALLY TO ADULT STABLE FLIES
STOMOXYS CALCITRANS

SPATES G E; WRIGHT J E

J ECON ENTOMOL 73 (4). 1980. 595-598.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Diflubenzuron was applied topically to adult *S. calcitrans* (L.) and after 24 h 11-25% of the dose was extracted from the chromatography paper that lined the insect holding cages. The amount of diflubenzuron recovered from adults decreased gradually. Although the amount of diflubenzuron in the eggs of treated females was insufficient for quantitation by high pressure liquid chromatography analysis, there was enough to reduce egg hatchability 97% for first 15 days posttreatment.

Descriptors/Keywords: CHROMATOGRAPHY PAPER, HIGH PRESSURE LIQUID
CHROMATOGRAPHY, EGG HATCHABILITY, REDUCTION

Record - 1156

CHITIN SYNTHETASE INHIBITORS AND THEIR POTENTIAL TO CONTROL THE ROOT-KNOT
NEMATODE MELOIDOGYNE JAVANICA

SPIEGEL Y; CHET I

NEMATOLOGICA 31 (4). 1985. 480-482.

Full Journal Title: Nematologica

Language: ENGLISH

Descriptors/Keywords: BENZOYLPHENYLUREA, CAPTAN, DIFLUBENZURON, ENDOSULFAN,
POLYOXINE-D, NIKKOMYCIN, TRIGARD, INSECT GROWTH REGULATOR, FUNGICIDE,
BIOASSAY

Record - 1157

EFFECT OF DIFLUBENZURON ON DNA SYNTHESIS IN PUPA OF CORCYRA CEPHALONICA
STAINTON

SRIRAMULU M; MEHROTRA K N

ENTOMON 12 (4). 1987. 335-338.

Full Journal Title: Entomon

Language: ENGLISH

ABSTRACT

DNA synthesis was monitored by assaying the radio activity of [3H] thymidine incorporated into

DNA in both diflubenzuron treated and control pupae of *Corcyra cephalonica* Stainton. The rate of [3H] thymidine incorporation increased throughout pupal development. Though there was initial increase in DNA synthesis in diflubenzuron treatment, with progressive increase in age there was 50 per cent inhibition of DNA synthesis in diflubenzuron treated pupa compared to control.

Descriptors/Keywords: DEVELOPMENT, METABOLIC, INHIBITION, INSECT GROWTH REGULATOR, TOXICITY, RADIO LABELING

Record - 1158

GROWTH PATTERN OF CORCYRA CEPHALONICA PUPA AND EFFECT OF DIFLUBENZURON ON PUPAL WEIGHT

SRIRAMULU M; MEHROTRA K N

ENTOMON 12 (1). 1987. 27-32.

Full Journal Title: Entomon

Language: ENGLISH

ABSTRACT

Growth pattern in normal and diflubenzuron treated pupa of *Corcyra cephalonica* was studied. The pupa continuously lost weight. Normal pupa lost weight by 0.59 mg/day. The loss in weight in diflubenzuron treated pupa was 0.75 mg/day/pupa.

Descriptors/Keywords: INSECT GROWTH REGULATOR

Record - 1159

EFFECT OF DIFLUBENZURON ON DNA CONTENT DURING PUPAL DEVELOPMENT IN CORCYRA CEPHALONICA

SRIRAMULU M; MEHROTRA K N

PROC INDIAN ACAD SCI ANIM SCI 95 (2). 1986. 147-154.

Full Journal Title: Proceedings of the Indian Academy of Sciences Animal Sciences

Language: ENGLISH

ABSTRACT

DNA content and effect of diflubenzuron was studied colorimetrically in developing pupae of *Corcyra cephalonica* Stainton. The DNA content in developing pupa followed a unique U-shaped curve. Diflubenzuron has no effect on DNA content in the pupae of *Corcyra cephalonica*.

Descriptors/Keywords: HISTOGENESIS, CHITIN SYNTHESIS INHIBITOR, U-SHAPED CURVE

Record - 1160

DETERMINATION OF THERMOLABILE UREA PESTICIDES AFTER DERIVATIZATION WITH HFBA USING GC-ECD AND CONFIRMATION BY MEANS OF GC-MSD

STAN H-J; KLAFFENBACH P

FRESENIUS' J ANAL CHEM 339 (1). 1991. 40-45.

Language: ENGLISH

ABSTRACT

The determination of urea pesticides is difficult by means of gas chromatography because they undergo thermal decomposition when applying standardized chromatographic conditions as used in multiresidue analysis. A method is therefore described to make possible the detection of these compounds by gas chromatography after derivatization with HFBA using either electron capture and nitrogen-phosphorus detection or a mass spectrometer as detector.

Descriptors/Keywords: BUTURON, CHLOROXURON, DIURON, METHABENZTHIAZURON, ISOPROTURON, DIFLUBENZURON, CHLORTOLURON, CYCLURON, FENURON, PENCYCURON,

METOBROMURON, MONOLINURON, LINURON, MONURON, NEBURON, TEBUTHIURON, METOXURON, FLUOMETURON, FOOD TOXICITY, ELECTRON CAPTURE, DETECTION, MASS SPECTROMETRY DETECTION, GAS CHROMATOGRAPHY, HEPTAFLUOROBUTYRIC ANHYDRIDE

Record - 1161

ST. CLAIR, L., M. WHITING, AND G. BOOTH. 1976. THE IMPACT OF DIMILIN ON PHYTOPLANKTON AND PERIPHYTON COMMUNITIES OF PROVO BAY: SUBMITTER: NTP-61. UNPUBLISHED STUDY RECEIVED JUL 25, 1983 UNDER UNKNOWN ADMIN. NO.; PREPARED BY BRIGHAM YOUNG UNIV. BOTANY DEPT. OF ZOOLOGY . SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 1162

STEELMAN, C. D., J. E. FARLOW, T. P. BREAUD, ET AL. 1974. EFFECTS OF INSECT DEVELOPMENT INHIBITING CHEMICALS ON PSOROPHORA COLUMBIAE (DYAR AND KNAB) AND NON-TARGET AQUATIC INSECT SPECIES IN RICE FIELDS. UNPUBLISHED STUDY RECEIVED FEB. 1976 UNDER 6G1744; PREPARED BY LOUISIANA STATE UNIV. DEPT. OF ENTOMOL. AND EXPERIMENTAL STATISTICS, SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 1163

EFFECT OF DISSOLVED HUMIC MATERIAL DHM ON BIOAVAILABILITY OF SOME ORGANIC XENOBIOTICS TO DAPHNIA MAGNA

STEINBERG C E W; XU Y; LEE S K; FREITAG D; KETTRUP A
CHEM SPECIATION BIOAVAILABILITY 5 (1). 1993. 1-9.

Language: ENGLISH

ABSTRACT

The effects of dissolved humic material (DHM) on the bioconcentration of six organic xenobiotics-chlorobenzuron (CCU), diflubenzuron (DFB), terbutylazine (TBA), diazinon, 4-chloroaniline (4-CA) and pentachlorophenol (PCP) to *Daphnia magna* (Straus) in laboratory experiments were investigated. Commercial Aldrich humic acids (A-DHM) were used as the sources of DHM. 24 h bioconcentrations (BC24) for these xenobiotics were determined in the presence of 0, 0.5, 5.0, 10, 20 and 50 mg L⁻¹ TOC. With diazinon, 4-CA and PCP 48 h bioconcentrations (BC48) were determined as well. The bioconcentrations (BC) of CCU and diazinon, were significantly reduced, when DHM concentrations increased. The effect on the other chemicals was insignificant. With diazinon DHM exhibited a distinct time-dependency: BC48 lay significantly below BC24-values. The observed reduction of bioavailability to *Daphnia magna* was attributed to the binding of the organic chemicals to DHM, which was quantitatively measured for CCU by an equilibrium dialysis technique. The association curves obtained for CCU and DHM at concentrations of 10, 20 and 50 mg L⁻¹ TOC were linear with decreasing slopes, when DHM increased. This indicates that the affinity of CCU for DHM increased with decreasing DHM concentration, most probably due to micelle formation of DHM at higher TOC concentrations, which reduces the available surface area.

Descriptors/Keywords: CHLORBENZURON, DIFLUBENZURON, TERBUTYLAZINE, DIAZINON, 4 CHLOROANILINE, PENTACHLOROPHENOL

Record - 1164

STEVENSON, J. 1978. THE ACUTE TOXICITY OF UNFORMULATED PESTICIDES TO WORKER HONEY BEES APIS MELLIFERA (L.). PLANT PATHOLOGY 27 (1): 38-40.

Record - 1165

CHEMICAL CONTROL OF PORINA IN SOUTH OTAGO MOSGIEL NEW ZEALAND SHEEP PASTURES

STEWART K M; FERGUSON C M

N Z J AGRIC RES 32 (3). 1989. 395-400.

Full Journal Title: New Zealand Journal of Agricultural Research

Language: ENGLISH

ABSTRACT

Granular, emulsifiable concentrate and micro-encapsulated EC formulations of diazinon, fenitrothion, and chlorpyrifos, micro-encapsulated methyl parathion EC, and the growth regulator diflubenzuron were compared for control of porina (*Wiseana* spp.) in three trials in Otago. Porina mortality from fenitrothion EC applied at different times between February and June was compared to that obtained with diflubenzuron applied to pasture at different times between March and June and at a range of application rates. Fenitrothion EC, chlorpyrifos EC, and methyl parathion MEC caused the highest mortality of porina with fenitrothion EC applied in late May at a rate of 1.1 kg a.i./ha being the most cost-effective. However, chemical control of porina may not be economic at current prices for chemicals and pastoral products. Diflubenzuron did not appear to control porina effectively in these South Otago trials regardless of rate of time of application.

Descriptors/Keywords: WISEANA-SPP, FORMULATION, PRICE, DIAZINON, FENITROTHION, CHLORPYRIFOS, METHYL PARATHION, INSECTICIDE, DIFLUBENZURON, GROWTH REGULATOR, PEST CONTROL, AGRICULTURE, CROP INDUSTRY

Record - 1166

STILL, G. C. AND R. A. LEOPOLD. 1978. THE DELIMINATION OF (N-[(4-CHLOROPHENYL) AMINO] CARBONYL)-2,6-DIFLUOROBENZAMIDE) BY THE BOLL WEEVIL. PEST. BIOCHEM. PHYSIOL. 9(3): 11-16.

Record - 1167

DIFLUBENZURON DIMILIN EFFECT OF LONG-TERM FEEDING OF LOW DOSES IN SUGAR CAKE OR SUCROSE SYRUP ON HONEY BEES APIS MELLIFERA IN STANDARD SIZE FIELD COLONIES

STONER A; WILSON W T

AM BEE J 122 (8). 1982. 579-582.

Full Journal Title: American Bee Journal

Language: ENGLISH

ABSTRACT

Standard-size (10-frame Langstroth) field colonies of honey bees, *A. mellifera* L., located in an area of limited natural bee forage were fed longterm controlled low doses of diflubenzuron (Dimilin) in sugar cake (1979) and sucrose syrup (1980). Dimilin fed in sugar cake significantly reduced sealed brood when fed at rates of 1.0 or 10 ppm and reduced adult bees when fed at the 10 ppm rate. No level of Dimilin, 0.01, 0.1 or 1.0 ppm, fed in sucrose syrup had any direct detectable effect on sealed brood, the adult bee population or mortality of adult bees.

Descriptors/Keywords: SEALED BROOD, MORTALITY

Record - 1168

STREBLER, G. 1979. UTILIZATION OF DIFLUBENZURON FOR LOCUST CONTROL (SCHISTOCERCA GREGARIA, PLANT PESTS). ZEITSCHRIFT FUR ANGEWANDTE ENTOMOLOGIE 88(2): 124-131.

Record - 1169

STRIBLING, H. L. AND H. R. SMITH. 1987. EFFECTS OF DIMILIN ON DIVERSITY AND ABUNDANCE OF FOREST BIRDS. NORTHERN J. OF APPL. FORESTRY 4 (1):37-38.

Record - 1170

EFFECT OF DIFLUBENZURON ON SOME HEMOLYMPH CONSTITUENTS OF ACHAEA JANATA LINN

SUBRAHMANYAM B; RAO P J

PROC INDIAN NATL SCI ACAD PART B BIOL SCI 52 (4). 1986. 425-430.

Full Journal Title: Proceedings of the Indian National Science Academy Part B Biological Sciences

Language: ENGLISH

ABSTRACT

Effect of oral feeding of diflubenzuron (1 and 5 ppm) on proteins, free amino acids, trehalose and cations of the haemolymph of the last instar *Achaea janata* L. larvae was studied. The protein concentration in treatments remained throughout more or less similar to that of control but amino acid concentration was higher at 96 hr post-treatment. Unlike in control there was no rapid initial increase in trehalose concentration in treatments. Na⁺ concentration decreased two fold in treatments whereas K⁺, Ca⁺⁺ and Mg⁺⁺ levels were unaffected.

Descriptors/Keywords: PROTEIN, AMINO ACID, TREHALOSE CATION

Record - 1171

JUVENOMIMETIC EFFECTS OF DIFLUBENZURON ON ACHAEA JANATA

SUBRAHMANYAM B; RAO P J; TIWARI L D

INDIAN J EXP BIOL 18 (3). 1980. 324-325.

Full Journal Title: Indian Journal of Experimental Biology

Language: ENGLISH

Descriptors/Keywords: NOTE, PIERIS-BRASSICAE

Record - 1172

EFFECT OF DIFLUBENZURON ON THE DEVELOPMENTAL STAGES OF CABBAGE BORER HELLULA UNDALIS FAB

SUMALATHA V; RAO P K; CHITRA K C

J INSECT SCI 5 (1). 1992. 23-26.

Language: ENGLISH

ABSTRACT

Diflubenzuron (DFB), a chitin synthesis inhibitor was tested against different immature stages of cabbage borer, *Hellula undalis* Fab. It was effective as a stomach poison. However contact action was also observed. DFB showed the highest per cent inhibition of egg and complete mortality of second instar larvae in the ingestion method at 0.1 per cent concentration. Larval and pupal treatments resulted in certain deformities in prepupae and adults.

Descriptors/Keywords: INSECTICIDE, EGG, LARVA, PUPA, CHITIN SYNTHESIS INHIBITOR, MORTALITY, PHYSICAL DEFORMITY, STOMACH POISON, PEST SPECIES

Record - 1173

INFLUENCE OF SURFACTANT CONCENTRATION ON FOLIAR RETENTION OF PESTICIDES USED IN FORESTING

SUNDARAM A

J ENVIRON SCI HEALTH PART B PESTIC FOOD CONTAM AGRIC WASTES 27 (5). 1992.
591-620.

Full Journal Title: Journal of Environmental Science and Health Part B Pesticides Food Contaminants and Agricultural Wastes

Language: ENGLISH

ABSTRACT

Aqueous tank mixes of permethrin, fenitrothion, *Bacillus thuringiensis* (B.t.), diflubenzuron (DFB), and glyphosate containing different amounts of Trion X-114, a nonionic surfactant, were prepared. Glyphosate formed clear solutions, permethrin and fenitrothion formed emulsions, DFB and B.t. provided suspensions. Emulsion stability of permethrin and fenitrothion increased with increasing surfactant level, while the emulsion drop size decreased. Foliage of white oak, trembling aspen, white spruce and balsam fir were dipped in tank mixes of pesticides (except B.t.) labelled with ¹⁴carbon. The amount of pesticide retained on foliage was determined by liquid scintillation counting. Foliage was also dipped in non-radioactive B.t. tank mixes, and the protein retained was determined colorimetrically. With all tank mixes, a direct relationship was observed between the mass of liquids retained on foliage and liquid viscosity. In contrast, the amount of pesticide retained was unaffected by viscosity, but was influenced by emulsion drop size. Initially, the amount of pesticide retained on foliage increased with increasing surfactant concentration. Beyond an optimum surfactant level, the emulsion drop sizes were too small and the emulsions became too stable to allow maximum retention of pesticides on foliage. With the glyphosate solutions, however, no optimum surfactant level was indicated because foliar concentrations continued to increase with increasing surfactant levels.

Descriptors/Keywords: BACILLUS-THURINGIENSIS, BACTERIA, MICROORGANISM, WHITE OAK, TREMBLING ASPEN, WHITE SPRUCE, BALSAM FIR, PLANT, GLYPHOSATE, DIFLUBENZURON, PERMETHRIN, FENITROTHION, PESTICIDE, FOLIAGE RETENTION, SURFACTANT STABILITY

Record - 1174

SPRAY ATOMIZATION AND DEPOSITION PATTERNS OF ONE NEWTONIAN AND TWO PSEUDOPLASTIC FORMULATIONS AFTER AERIAL APPLICATION OVER A MATURE CONIFER FOREST IN NEWFOUNDLAND CANADA

SUNDARAM A; WEST R J; RASKE A G; RETNAKARAN A

J ENVIRON SCI HEALTH PART B PESTIC FOOD CONTAM AGRIC WASTES 23 (1). 1988. 85-99

Full Journal Title: Journal of Environmental Science and Health Part B Pesticides Food Contaminants and Agricultural Wastes

Language: ENGLISH

ABSTRACT

Spray atomization and deposition patterns of three formulations were investigated in five aerial spray trials in Newfoundland, to understand the inter-relationships between physical properties, drop size spectra and recovery of the spray volume at ground level. Diflubenzuron (DFB) was sprayed at 30 g active ingredient in 2.0 L/ha. Futura XLV (Fu-XLV) and Thuricide 48LV (Thu-48LV), spray formulations of *Bacillus thuringiensis* (B.T.), were both applied undiluted at 30 BIU/ha, but in volume rates of 2.1 L/ha and 2.36 L/ha respectively. Each of the three formulations was applied over a 15 ha plot using a Piper Pawnee aircraft fitted with six Micronair AU5000 atomizers. Spray drops were sampled with Kromekote cards and deposits were collected on glass plates. Physical properties measured were: viscosity at variable shear rates, volatility and surface tension. The viscosities increased progressively from low (for DFB), moderate (for Thu-48LV) to high (for Fu-XLV) values, showing a gradual increase in pseudoplastic behaviour of the three formulations. The volatility data indicated an inverse relationship to the viscosities, but the surface tensions were similar for all the formulations. The highly pseudoplastic Fu-XLV atomized into the least wide drop size spectrum. The Newtonian formulation of DFB, on the other hand, atomized into the widest drop spectrum; and the moderately pseudoplastic Thu-48LV, into an intermediate drop spectrum. Thus viscosity and volatility were more important factors in liquid atomization and drop deposition, than surface tension. Among the three meteorological factors

measured, relative humidity appeared more important in drop deposition than did wind speed and temperature, within the range measured.

Descriptors/Keywords: PHYSICOCHEMICAL PROPERTIES, DIFLUBENZURON, FUTURA XLV, THURICIDE, BACILLUS-THURINGIENSIS, PESTICIDE HUMIDITY, WIND, TEMPERATURE

Record - 1175

SPRAY DEPOSIT PATTERNS AND PERSISTENCE OF DIFLUBENZURON IN A FOREST ECOSYSTEM AFTER AERIAL SPRAYING WITH TWO APPLICATION RATES

SUNDARAM A; KINGSBURY P D; NOTT R; LEUNG J W

194TH AMERICAN CHEMICAL SOCIETY NATIONAL MEETING, NEW ORLEANS, LOUISIANA, USA, AUGUST 30-SEPTEMBER 4, 1987. ABSTR PAP AM CHEM SOC 194 (0). 1987. AGRO 154.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: ABSTRACT, SOIL SEDIMENT, STREAM WATER

Record - 1176

SPRAY DEPOSIT PATTERNS AND PERSISTENCE OF DIFLUBENZURON IN SOME TERRESTRIAL COMPONENTS OF A FOREST ECOSYSTEM AFTER APPLICATION AT THREE VOLUME RATES UNDER FIELD AND LABORATORY CONDITIONS

SUNDARAM K M S

PESTIC SCI 32 (3). 1991. 275-294.

Full Journal Title: Pesticide Science

Language: ENGLISH

ABSTRACT

Spray deposit patterns and persistence of diflubenzuron [1-(4-chlorophenyl)-3-(2,6-difluorobenzoyl)urea] in white pine (*Pinus strobus* L.) and sugar maple (*Acer saccharum* Marsh.) canopies, forest litter and soil were studied after aerial application of a 250 g kg⁻¹ wettable powder formulation, 'Dimilin WP-25', at 70 g active ingredient (a.i.) ha⁻¹, using three volume rates (10, 5 and 2.5 liters ha⁻¹) over three blocks in a mixed forest near Kaladar, Ontario, Canada, during 1986. Spray droplets were sampled at ground level using 'Kromekote' cards, and diflubenzuron deposits were collected on glass plates. Droplets were the largest (with a volume median diameter of 250 .mu.m) at the 10 liters ha⁻¹ rate, resulting in the highest number of droplets per cm² on the Kromekote cards and deposits of diflubenzuron on glass plates. Deposits on foliage, litter and soil were also correspondingly the highest. At the 5.0 and 2.5 liters ha⁻¹ rates, volume median diameter values were smaller (195 and 150 .mu.m, respectively) and deposits on the substrates were markedly lower. In the spray block that received 10 liters ha⁻¹, diflubenzuron persisted in foliage as long as 120 days after treatment, but it lasted for only about a week in forest litter and soil samples. At 5 and 2.5 liters ha⁻¹, diflubenzuron failed to persist in foliage as long, and residues in litter and soil, which were barely above the quantification limit, persisted only for a few days. Laboratory studies, conducted under constant meteorological conditions using different droplet-size spectra, showed that deposit levels were not affected when the volume median diameter of the spray cloud decreased from 253 .mu.m to 145 .mu.m but were markedly reduced as this progressively decreased from 92 to 37 .mu.m. The dissimilarities between the field and laboratory findings were attributed to meteorological and other factors influencing droplet deposition on tree canopy in aerial applications of pesticides over forests.

Descriptors/Keywords: PINUS-STROBUS, ACER-SACCHARUM, PLANT, SOIL, FORESTRY, AGRICHEMICAL, 1-4 CHLOROPHENYL-3-2 6-DIFLUOROBENZOYLUREA, PESTICIDE AERIAL APPLICATION, ANALYTICAL TECHNIQUES, KALADAR ONTARIO CANADA

Record - 1177

ENVIRONMENTAL PERSISTENCE AND IMPACT OF DIFLUBENZURON IN A FOREST AQUATIC ENVIRONMENT FOLLOWING AERIAL APPLICATION

SUNDARAM K M S; HOLMES S B; KREUTZWEISER D P; SUNDARAM A; KINGSBURY P D

ARCH ENVIRON CONTAM TOXICOL 20 (3). 1991. 313-324.

Full Journal Title: Archives of Environmental Contamination and Toxicology

Language: ENGLISH

ABSTRACT

Dimilin WP-25 (diflubenzuron) was applied at a rate of 70 g active ingredient (AI) in 10, 5, and 2.5 L/ha to three spray blocks in a mixed boreal forest near Kaladar, Ontario, Canada. Water, sediment, and aquatic plants were collected from two ponds and a stream at intervals up to 30 days post-treatment for analysis of diflubenzuron (DFB) residues. The duration of detectable residues was different for each substrate, but in all cases was less than two weeks. Zooplankton and benthic invertebrate populations were monitored for up to 110 days post-spray in two ponds in the high volume rate block and in control ponds. Significant mortality occurred in two groups of caged macroinvertebrates amphipoda and immature corixidae) 1 to 6 days after the ponds were treated with Dimilin. Three taxa of littoral insects (Caenis, Celithemis and Coenagrion) were significantly reduced in abundance in the treated ponds 21 to 34 d post-treatment, but recovered to pre-treatment levels by the end of the season. Of the six remaining groups studied, only one (immature corixidae), may have been slightly affected by treatment. Zooplankton (cladocera and copepoda) populations were reduced 3 days after treatment and remained suppressed for 2-3 months.

Descriptors/Keywords: CAENIS-SP, CELITHEMIS-SP, COENAGRION-SP, INSECT, ZOOPLANKTON, DIMILIN WP-25, WATER, SOIL POLLUTION 1-4 CHLOROPHENYL-3-2 6-DIFLUOROBENZOYLUREA, INSECTICIDE, FORESTRY ENVIRONMENTAL SURVEILLANCE, KALADAR ONTARIO CANADA

Record - 1178

DEPOSITION PERSISTENCE AND DISSIPATION OF DIFLUBENZURON IN POND AND STREAM ENVIRONMENTS FOLLOWING APPLICATION OF DIMILIN WP-25

SUNDARAM K M S

ANNUAL MEETING OF THE CANADIAN PEST MANAGEMENT SOCIETY, LONDON, ONTARIO, CANADA, JUNE 22-26, 1987. CAN J PLANT SCI 69 (1). 1989. 259-260.

CODEN:CPLSA

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: ABSTRACT, WATER SEDIMENT, AQUATIC PLANTS, INSECTICIDE

Record - 1179

HIGH PERFORMANCE LIQUID CHROMATOGRAPHIC METHOD FOR THE DETERMINATION OF DIFLUBENZURON FROM FORESTRY SUBSTRATES

SUNDARAM K M S; NOTT R

J LIQ CHROMATOGR 12 (12). 1989. 2333-2344.

Full Journal Title: Journal of Liquid Chromatography

Language: ENGLISH

ABSTRACT

Diflubenzuron (DFB) [Dimilin, 1-(4-chlorophenyl)-3-(2,6-difluorobenzoyl) urea] was extracted from maple foliage, pine needles, manna grass, fish and pond water with dichloromethane and forest soil, litter and pond sediment with aqueous acetonitrile. An aliquot of the filtered extract, after necessary partition and concentration, was cleaned using a Florisil column. Following elution, the final residue was dissolved in acetonitrile and analyzed by liquid chromatography on a RP-8, 10 .mu.m column with a

mobile phase consisting of acetonitrile-water and UV detection at 254 nm. Average recoveries were over 80%. Minimum detectable and quantifiable levels respectively were 0.05 and 0.10 ppb for water and 0.05 and 0.10 ppm for the other substrates.

Descriptors/Keywords: FISH, INSECTICIDE, MAPLE FOLIAGE, PINE NEEDLES, MANNA, GRASS, POND, WATER DICHLOROMETHANE, FOREST SOIL, LITTER, POND SEDIMENT

Record - 1180

MOBILITY OF DIFLUBENZURON IN TWO TYPES OF FOREST SOILS

SUNDARAM K M S; NOTT R

J ENVIRON SCI HEALTH PART B PESTIC FOOD CONTAM AGRIC WASTES 24 (1). 1989. 65-86

Full Journal Title: Journal of Environmental Science and Health Part B Pesticides Food Contaminants and Agricultural Wastes

Language: ENGLISH

ABSTRACT

Diﬂubenzuron (DFB) [1-(4-chlorophenyl)-3-(2,6-diﬂuorobenzoyl) urea] and its two formulations, Dimilin WP-25 and Dimilin SC-48, were applied separately at 17.23, 51.69 and 155.07 .mu.g of active ingredient (A.I.) (corresponding to 70, 210 and 630 g A.I./ha) to the top layers of columns (30 .times. 5.6 cm i.d.) packed with either sandy or clay loam forest soils. Water (1.251 L) equivalent to 50.8 cm of precipitation was allowed to leach through each column. After leaching, the columns were divided into 5 unequal segments and the DFB residues in soils were extracted and analyzed by high performance liquid chromatography (HPLC). Mobility of DFB was low and did not increase with dosage. At a deposit rate equivalent to 70 g A.I./ha, nearly all the residues were found within 2.5 cm of the top of the column. Mobility of DFB did not increase with dosage. Even at 630 g A.I./ha, only about 9% of the technical DFB, 7% of Dimilin SC-48 and 4% of Dimilin Wp-25 moved below the 2.5 cm level in sandy loam. Mobility of DFB in clay loam was lower than in sandy loam. No residues were found below the 10 cm level or in the leachates in either soil type at all dosage levels. In addition to soil type, mobility of DFB was also influenced by the additives present in the formulation with technical DFB > Dimilin SC-48 > Dimilin WP-25.

Descriptors/Keywords: INSECTICIDE, POLLUTION

Record - 1181

EFFECTS OF DIFLUBENZURON ON A FIELD POPULATION OF THE COCONUT

BLACK-HEADED CATERPILLAR NEPHANTIS SERINOPA LEPIDOPTERA GELECHIIDAE AND ITS PARASITE PARASIEROLA NEPHANTIDIS HYMENOPTERA BETHYLIDAE IN INDIA

SUNDARAMURTHY V T

BULL ENTOMOL RES 70 (1). 1980. 25-32.

Full Journal Title: Bulletin of Entomological Research

Language: ENGLISH

ABSTRACT

Diﬂubenzuron was applied once at 2.5-20 g a.i. [active ingredient] in 10 l of water to coconut palms infested with larvae of *N. serinopa* Meyr. in Tamil Nadu, India. The entire field population of larvae was eliminated within 14-18 days, depending on the dose. Mortality due to molting inhibition in larvae treated in the field and then brought into the laboratory ranged from 77.4-88.8%. The higher the dosage, the higher was the inhibition of transformation to the pupal and adult stages. Diﬂubenzuron had an antifeedant effect on the larvae. The compound directly or indirectly affected the development of *Parasierola nephantidis* (Mues.), a parasite of *N. serinopa*. The preference of female parasites for parasitizing host larvae and oviposition in, and the number of progeny produced from a single host larva that had been treated with diﬂubenzuron in the field were significantly reduced. The percentage of normal adults produced from treated parasite larvae ranged from 17.3-43.0% as against 99.1% from untreated larvae. Treatment of mature parasite larvae directly with diﬂubenzuron in the

laboratory affected development and caused morphological deformities in the adults.

Descriptors/Keywords: COCONUT, PALM, MORPHOLOGICAL DEFORMITY

Record - 1182

SUNDARAMURTHY, V. T. AND K SANTHANAKRISHNAN. 1979. MORPHOGENETIC EFFECTS OF DIFLUBENZURON, AN INHIBITOR OF CHITIN DEPOSITION, ON THE COCONUT BLACK-HEADED CATERPILLAR NEPHANTIS SERINOPA MYER. PESTICIDE SCI. SOC. OF CHEMICAL INDUSTRY. 10(2): 147-150.

Record - 1183

EFFECT OF AN INHIBITOR OF CHITIN DEPOSITION IN TOBACCO CATERPILLAR SPODOPTERA LITURA UNDER INDUCED HYPER HORMONE CONDITION

SUNDARAMURTHY V T; BALASUBRAMANIAN M

Z ANGEW ENTOMOL 85 (3). 1978 317-320.

Full Journal Title: Zeitschrift fuer Angewandte Entomologie

Language: ENGLISH

ABSTRACT

Insect growth inhibitors, i.e., juvenile hormone analog (Altosid) and phenyl urea (Dimilin) in 6th instar larvae of *S. litura* inhibited their further transformation into pupae. Altosid (1 .mu.g) caused a 73.10% inhibition while 1 .mu.g Altosid + 0.1% Dimilin caused 99.60%. Phenyl urea under hyper hormone condition resulted in a high degree of inhibition by producing more larval-pupal deformities and inhibited the completion of molting in superlarvae.

Descriptors/Keywords: INSECT GROWTH INHIBITORS, JUVENILE HORMONE ANALOG, ALTOSID, PHENYL UREA, DIMILIN, INSTAR LARVAE, INHIBITION, PUPAE, HYPER HORMONE CONDITION, LARVAL PUPAL DEFORMITIES, MOLTING INHIBITION, SUPER LARVAE

Record - 1184

EFFECT OF AN INHIBITOR OF CHITIN DEPOSITION ON THE GROWTH AND DIFFERENTIATION OF TOBACCO CATERPILLAR SPODOPTERA LITURA NOCTUIDAE LEPIDOPTERA

SUNDARAMURTHY V T

Z PFLANZENKR PFLANZENSCHUTZ 84 (10). 1977. 597-601.

Full Journal Title: Zeitschrift fuer Pflanzenkrankheiten und Pflanzenschutz

Language: ENGLISH

ABSTRACT

Feeding the last instar caterpillars of *S. litura* with [castor bean] leaves treated with various doses of diflubenzuron resulted in 46.0-96.0% inhibition of molting and caused various degrees of morphological deformities in pupae. The treatment reduced the amount of food ingested, weight gained by larvae and adult emergence. Adults which emerged at lower doses were malformed and non-functional.

Descriptors/Keywords: CASTOR-BEAN, DIFLUBENZURON, DEFORMITIES, FOOD, EMERGENCE, PUPA, LARVA

Record - 1185

CONTACT TOXICITY OF SYNTHETIC PYRETHROIDS ORGANO PHOSPHORUS AND CARBAMATE INSECTICIDES TO ADULTS OF THE PARASITE CHELONUS BLACKBURNI

SURULIVELU T; MENON M V

J AGRIC SCI 98 (2). 1982. 331-334.

Full Journal Title: Journal of Agricultural Science

Language: ENGLISH

ABSTRACT

Four synthetic pyrethroids: fenvalerate, deltamethrin, cypermethrin and permethrin were evaluated as spray deposits on cotton leaves for their contact toxicity to adults of the parasite *C. blackburni* Cameron (Braconidae). Fenvalerate was the least toxic of the 4 pyrethroids. In another study 5 organophosphorus insecticides (profenofos, bromophos ethyl, chlorpyrifos, quinalphos, monocrotophos), 3 carbamates (U.C.51762, carbosulfan, bendiocarb) and diflubenzuron were evaluated for their contact toxicity to the same parasite. U.C.51762 (carbamate group experimental insecticide) and diflubenzuron were less toxic while the 5 organophosphorus insecticides, carbosulfan and bendiocarb were highly toxic to the parasite. Contact toxicity of spray deposits of 4 synthetic pyrethroids were studied against parasitization and subsequent development of the parasite *C. blackburni* on thin strips of egg cards of *Corcyra cephalonica* Stainton. Fenvalerate was not reducing oviposition or affecting subsequent development of the parasite and emergence from the parasitized eggs while the other pyrethroids, permethrin, cypermethrin and deltamethrin, were toxic.

Descriptors/Keywords: CORCYRA-CEPHALONICA, COTTON, OVIPOSITION, FENVALERATE, DELTAMETHRIN, CYPERMETHRIN, PERMETHRIN, PROFENOFOS, BROMOPHOS, ETHYL CHLORPYRIFOS, QUINALPHOS, MONOCROTOPHOS, UC-51762, CARBOSULFAN, BENDIOCARB, DIFLUBENZURON

Record - 1186

THE EFFECT OF MIXTURES OF *BACILLUS THURINGIENSIS* AND GROWTH REGULATORS ON THE PHYSIOLOGICAL STATE OF THE CATERPILLARS

SVETKA M; NOVOTNY J

LESNICTVI (PRAGUE) 37 (7). 1991. 533-542.

Full Journal Title: LESNICTVI (Prague)

Language: CZECH

ABSTRACT

Laboratory trials were conducted to test the effect of the promising mixtures of the biopreparation based on *Bacillus thuringiensis* var. *kurstaki* with sublethal doses of the growth regulators diflubenzuron and telfubenzuron in the control of the caterpillars of *Lymantria dispar*. The effect of the different experimental treatments of the viability and physiological state of the caterpillars was evaluated on the basis of determination of the levels of reserve substances in the bodies of the caterpillars after the tests were finished. Under field conditions the tested variants of the preparations were experimentally applied during the aerial control of *Tortrix viridana* in oak stands. In the laboratory, the strongest effect in the control of *L. dispar* caterpillars was recorded in the mixture of Bathurin 82 (100 g per ha) and Nomolt 15SC (100 mg of active ingredient per ha): the effectiveness of this treatment, compared with that using pure biopreparation, was higher by 37.3% after five days and by 23.6% after ten days. No such favourable effect was demonstrated in the case of mixture of Bathurin 82 with Dimilin 8SC. As the effectiveness of Bathurin 82 applied at a rate of 100 g per hectare was comparatively high, it appears suitable in further tests with combined treatments to reduce the Bathurin 82 dose to 50 g per hectare. As demonstrated by the analysis of the caterpillars that had died during the tests, the lipid levels varied greatly and were both higher and lower in the different treatments, compared with the control. An increase in lipid levels was recorded after the application of the growth regulators alone (+12.99%, +9.39% in comparison with control) and after the application of the mixture of Bathurin with Dimilin 48SC. (+8.05%). On the other hand, a decline in the content of lipids was recorded after the application of a mixture of Bathurin 82 with Nomolt 15SC. The content of glycogen in the bodies of the caterpillars declined in all variants of treatment (-10.6 to 18.7 mg per 1 kg, compared with the control). Considering the influence on the viability of the experimental caterpillars, the mixture of Bathurin 82 with Nomolt 15SC had the strongest physiological effect: the caterpillars had the lowest level of reserve substances after application of this mixture. Aerial application of the biopreparation Bathurin 82 at rates of 1 and 2 kg per ha (16 and 32 BIU) had an effectiveness of 73 and 85% in the control of *Tortrix viridana*.

caterpillars. The application of a mixture of Bathurin 82 (1 kg per ha) with Dimilin 40SC (3 and 6 g of active ingredient of diflubenzuron per ha) had an effectiveness of 90 and 93% i.e. 17 to 20% more in comparison with the pure biopreparation.

Descriptors/Keywords: BACILLUS-THURINGIENSIS-VAR-KURSTAKI, LYMANTRIA-DISPAR, TORTRIX-VIRIDIANA, OAK, CHITIN SYNTHESIS INHIBITOR, CROP PEST, BIOLOGICAL CONTROL, INTEGRATED PEST MANAGEMENT, LIPID, GLYCOGEN, DIFLUBENZURON, TEFLUBENZURON

Record - 1187

SWAMY, S. P. A. K. AND K. C. PUNNALAH. 1984. EFFECT OF DIFLUBENZURON (DIMILIN) ON SPOTTED LEAF BEETLE OF BRINJAL EPILACHNA VIGINTIOCTOPUNCTATA. THE ANDHRA AG. JOURNAL. 31(4): 347-348.

Record - 1188

EFFECTS OF DIMILIN ON FRESHWATER LITTER DECOMPOSITION

SWIFT M C; SMUCKER R A; CUMMINS K W

ENVIRON TOXICOL CHEM 7 (2). 1988. 161-166.

Full Journal Title: Environmental Toxicology and Chemistry

Language: ENGLISH

ABSTRACT

The pesticide Dimilin (diflubenzuron) is widely used on forests in Maryland to control gypsy moths, and it may enter streams via leaf litter. We measured the effects of Dimilin on stream leaf litter processing using artificial leaf packs treated with the pesticide. Over the entire study period (464 degree days) the Dimilin-treated packs were processed more rapidly than control packs. There was a continuous loss of Dimilin from the packs, apparently due to leaching. Both Dimilin-treated and control packs were quickly colonized by macroinvertebrates and the maximum total macroinvertebrate biomass occurred when about 50% of the leaf-pack biomass remained. The macroinvertebrate community in the leaf packs was typical for western Maryland. There was little difference in the macroinvertebrate communities on the Dimilin-treated and the control packs; any possible differences between treatments were probably obscured by recolonization of the packs by invertebrate drift. Bioassays were conducted using two shredder macroinvertebrates (*Tipula abdominalis* and *Platycentropus radiatus*) to compare growth and mortality when they were fed untreated and Dimilin-treated tulip poplar leaves. Mortality was significantly higher and growth significantly lower in the shredders fed Dimilin-treated leaves.

Descriptors/Keywords: TIPULA-ABDOMINALIS, PLATYCENTROPUS-RADIATUS, INSECTICIDE GYPSY MOTH CONTROL, INDICATOR, ORGANISM, TULIP TREES, MARYLAND USA

Record - 1189

SWIFT, M. C. , R. A. SMUCKER, AND K. W. CUMMINS. 1987. EFFECTS OF DIMILIN ON STREAM INVERTEBRATES IN WEST MARYLAND. GYPSY MOTH REVIEW. 1987. CHARLESTON, WV.

Record - 1190

INSECTICIDE RESISTANCE IN DIAMONDBACK MOTH IN MALAYSIA

SYED A R

TALEKAR, N. S. (ED.). DIAMONDBACK MOTH AND OTHER CRUCIFER PESTS; SECOND INTERNATIONAL WORKSHOP, TAINAN, TAIWAN, DECEMBER 10-14, 1990. 603P. ASIAN VEGETABLE RESEARCH AND DEVELOPMENT CENTER (AVRDC): SHANHUA, TAIWAN. ISBN 92-9058-054-2. 0 (0). 1992. 437-442.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: PLUTELLA-XYLOSTELLA, BACILLUS-THURINGIENSIS, CRUCIFER PEST, METHAMIDOPHOS, CYPERMETHRIN, TEFLUBENZURON, CHLORFLUAZURON, DIFLUBENZURON, AVERMECTIN

Record - 1191

ANALYSIS OF THE GENOTOXIC ACTIVITIES OF 5 COMPOUNDS AFFECTING INSECT FERTILITY

SZABAD J; BENNETTOVA B

MUTAT RES 173 (3). 1986. 197-200.

Full Journal Title: Mutation Research

Language: ENGLISH

ABSTRACT

The genotoxicity of 5 compounds that affect insect fertility were tested by means of the 'Drosophila wing mosaic assay'. Larvae heterozygous for recessive marker mutations were fed with the food containing the test compound for a few days, and after they had developed to adults their wings were screened for clones of wing cells exhibiting the phenotype of recessive marker mutations. 6-Azaauridine, dimilin and methoprene showed no activity. Actinomycin C displayed a low level of genotoxicity, while HMPA was a very potent mutagen.

Descriptors/Keywords: DROSOPHILA, ACTINOMYCIN, D 6 AZAURIDINE, DIMILIN, METHOPRENE, HEXAMETHYLPHOSPHORAMIDE, RECESSIVE MARKER MUTATION, WING MOSAIC ASSAY

Record - 1192

SZMIDT, A. AND W. SLIWA. 1980. STUDIES ON THE APPLICATION OF DIMILIN IN FOREST PROTECTION. SYLWAN. 124(11): 49-56. WARSZAWA, PANSTWOWE WYDAWN.

Record - 1193

NUISANCE MIDGES DIPTERA CHIRONOMIDAE AND THEIR CONTROL IN JAPAN

TABARU Y; MORIYA K; ALI A

J AM MOSQ CONTROL ASSOC 3 (1). 1987. 45-49.

Full Journal Title: Journal of the American Mosquito Control Association

Language: ENGLISH

Descriptors/Keywords: REVIEW, CHIRONOMUS-YOSHIMATSUI, TOKUNAGAYUSURIKA-AKAMUSHI, PROCLADIUS-SP, METHOPRENE, DIFLUBENZURON, TEMOPHOS, INSECTICIDE HABITAT

Record - 1194

TABARU, Y. 1985. STUDIES ON CHEMICAL CONTROL OF A NUISANCE CHIRONOMID MIDGE (DIPTERA: CHIRONOMIDAE). EFFICACY OF TWO INSECT GROWTH REGULATORS TO CHIRONOMUS YOSHIMATSUI IN LABORATORY AND FIELD. JAPANESE J. OF SANIT. ZOOL. 36(4): 309-313.

Record - 1195

INHIBITION OF CHITIN SYNTHESIS BY 1-3 5 DICHLORO-2 4-DIFLUOROPHENYL-3-2 6-DIFLUOROBENZOYLUREA CME-134 IN THE CABBAGE ARMYWORM MAMESTRA BRASSICAE **TADA M; MATSUMOTO Y; MITSUI T; NOBUSAWA C; FUKAMI J-I**

J PESTIC SCI 11 (2). 1986. 189-196.

Full Journal Title: Journal of Pesticide Science

Language: ENGLISH

ABSTRACT

When either topically applied or mixed in the diet, CME-134, 1-(3,5-dichloro-2,4-difluorophenyl)-3-(2,6-difluorobenzoyl)urea, prevented pupation in last instar larvae of *Mamestra*. CME-134 was about 5 times as effective as diflubenzuron by topical application, with its LD50 value being 0.016 .mu.g/insect. By dietary administration, the LD50 values of both insecticides were almost same (0.02 ppm) but CME-134 was about twice as effective as diflubenzuron when the LD100 values were compared. After application of the same doses of both CME-134 and diflubenzuron to last instar larvae, chitin synthesis was studied by measuring ¹⁴C-GA incorporation into cuticle and midguts. CME-134 inhibited chitin synthesis in vivo. The inhibition by CME-134 progressed faster than by diflubenzuron, although CME-134 was a less potent inhibitor than diflubenzuron for chitin synthesis in vitro using cuticle and midguts. The results suggest that the insecticidal activity of CME-134 is based on strong inhibition of chitin synthesis as so is that of diflubenzuron. CME-134 did not inhibit chitin synthetase that was prepared from the midguts of last instar *Mamestra* larvae even at a concentration of 1.0 times. 10⁻⁴ M.

Descriptors/Keywords: DIFLUBENZURON, INSECT GROWTH REGULATOR, TOXICODYNAMICS, CHITIN SYNTHETASE

Record - 1196

TAFT, H., A. HOPKINS. AND E. P. LLOYD. 1976. APPLICATION FOR AN EXPERIMENTAL PERMIT TO SHIP DIMILIN (TM) W-25 FOR COTTON BOLL WEEVIL CONTROL: RESIDUE DATA AND METHODOLOGY. UNPUBLISHED STUDY RECEIVED FEB. 10, 1976 UNDER PP#6G1744: PREPARED IN COOPERATION WITH USDA, APHIS BOLL WEEVIL RESEARCH LAB., SUBMITTED BY THOMPSON HAYWARD CHEMICAL CO.

Record - 1197

TOXICITY AND RESIDUAL EFFECTS OF NOVEL PESTICIDES AGAINST RICE WEEVIL
SITOPHILUS ORYZAE L. COLEOPTERA CURCULIONIDAE

TAHIR S; ANWAR T; NAQVI S N H

PAK J ZOOL 24 (2). 1992. 111-114.

Full Journal Title: Pakistan Journal of Zoology

Language: ENGLISH

ABSTRACT

The toxicity and residual effects of malathion, dimilin and "Neem extract factor B" (NfB) were tested against adults of rice weevil, *Sitophilus oryzae* (L.). The LD50's by impregnation method were 1.04, 28.0 and 86.46 .mu.g/cm² for malathion, dimilin and NfB, respectively. The highest concentration used (malathion 0.05%, dimilin 0.25%, NfB 0.5%) were effective upto 7-10 days after treatment.

Descriptors/Keywords: MALATHION, DIMILIN, NEEM EXTRACT FACTOR B

Record - 1198

TAKAHASHI, K., K. YAGI, AND L. K. HATTORI. 1985. THE EFFECTS OF TWO INSECT GROWTH REGULATORS ON THE BITING MUDGES, CULICOIDES CURCUMSCRIPTUS KIEFFER (DIPTERA: CERATOPOGONIDAE). JAP. JOUR. OF SANIT. ZOOL. 36(4): 353-355.

Record - 1199

TAKAHASHI, R. M. AND T. MIURA. 1975. INSECT DEVELOPMENTAL INHIBITORS: MULTIPLE APPLICATIONS OF DIMILIN AND ALTOSID TO GAMBUSIA AFFINIS (BAIRD AND GRIARD). PROC. PAP. ANNU. CONF. CALIF. MOSQ. CONTROL ASSOC. 43RD. PP. 85-87.

Record - 1200

DIFLUBENZURON DIFFERENTIAL TOXICITY TO LARVAE OF THE COLORADO POTATO BEETLE COLEOPTERA CHRYSOMELIDAE AND ITS INTERNAL PARASITE DORYPHOROPHAGA DORYPHORAE DIPTERA TACHINIDAE

TAMAKI G; CHAUVIN R L; MOFFITT H R; MANTEY K D

CAN ENTOMOL 116 (2). 1984. 197-202.

Full Journal Title: Canadian Entomologist

Language: ENGLISH

ABSTRACT

An insecticide, diflubenzuron, suppressed 3rd- and 4th-instar larvae of the Colorado potato beetle, *Leptinotarsa decemlineata* (Say), with reduced effect on *D. doryphorae* (Riley) developing within the larvae. Concentrations applied to potato foliage were 50, 100, 300 and 500 mg/L. In laboratory and greenhouse tests, parasite survival was not adversely affected when the 3rd instars were treated with 50 mg/L diflubenzuron but survival decreased to 0 and 4% at 300 and 500 mg/L. Survival and emergence of the parasite from treated 4th instars were not adversely affected at any concentration tested. Fourth-instar beetle larvae were much more tolerant of diflubenzuron than were the 3rd instars. Neither fertility nor the ability to parasitize beetle larvae was adversely affected in adult parasites emerging from treated 3rd or 4th instars. Adult beetles developing from treated larvae mated normally and laid fertile eggs. Foliage consumption by the beetle larvae decreased progressively as dosage of diflubenzuron increased but only slowly once the dosage increased beyond 100 mg/L.

Descriptors/Keywords: LEPTINOTARSA-DECEMLINEATA, POTATO, INSECT GROWTH REGULATOR, FERTILITY

Record - 1201

FATE OF TWO PHENYLBENZOYLUREA INSECTICIDES IN AN ALGAE CULTURE SYSTEM SCENEDESMUS SUBSPICATUS

TAN Y-Y; THUMM W; JOBELIUS-KORTE M; ATTAR A; FREITAG D; KETTRUP A

CHEMOSPHERE 26 (5). 1993. 955-962.

Full Journal Title: Chemosphere

Language: ENGLISH

ABSTRACT

The bioaccumulation, elimination and degradation of ¹⁴C-labelled diflubenzuron (DFB) and of 1-(2-chlorobenzoyl)-3-(4-chlorophenyl)urea (CCU) was studied in a laboratory algae culture system of *scenedesmus subspicatus*. Algae were exposed at an initial concentration of 200 .mu.g/l for seven days. Neither substance had an inhibitory effect on the growth of algae. The half life of DFB and CCU was 3 and 1 days, respectively, as measured by HPLC. The distribution of ¹⁴C between medium and algae was measured. In the case of DFB radioactivity in algae increased steadily and levelled off at approximately 60% after 5 days. Due to algae growth BCF values decreased from 4310 to 889 for DFB and from 6719 to 304 for CCU during the exposure period. The relationship between algae density and bioconcentration could be correlated by an adsorption isotherm. Elimination of both compounds was rapid during the first hours

Descriptors/Keywords: WATER POLLUTION EFFECTS, PLANT TOXICITY, UPTAKE, ACCUMULATION, GROWTH EFFECTS, ENVIRONMENTAL SURVEILLANCE

Record - 1202

COMPARATIVE STUDY ON THE EFFECTS OF FIVE BENZOYLPHENYLUREA INSECTICIDES
ON HAEMATOLOGICAL PARAMETERS IN RATS

TASHEVA M; HRISTEVA V

J APPL TOXICOL 13 (1). 1993. 67-68.

Full Journal Title: Journal of Applied Toxicology

Language: ENGLISH

ABSTRACT

Five benzoylphenylurea insecticides were administered to male Wistar rats for 28 days at oral doses of 100 mg kg⁻¹ each. Elevation of methaemoglobin was found only in the diflubenzuron- and triflumuron treated groups. The number of reticulocytes was increased in all of the treated groups.

Descriptors/Keywords: DIFLUBENZURON, FLUFENOXURON, HEXAFLUMURON, TEFLUBENZURON TRIFLUMURON, HEMATOLOGICAL PARAMETERS, METHEMOGLOBIN FORMATION, RETICULOCYTE COUNT

Record - 1203

RADIOSYNTHESIS OF BENZOYL-3,4,5-TRITIATED-DIFLUBENZURON BY A ROUTE
APPLICABLE TO OTHER HIGH-POTENCY INSECT GROWTH REGULATORS

TECLE B; RUZO L O; CASIDA J E

J AGRIC FOOD CHEM 36 (1). 1988. 178-180.

Full Journal Title: Journal of Agricultural and Food Chemistry

Language: ENGLISH

ABSTRACT

2,6-Difluoro-3,4,5-tribromobenzoic acid, from reaction of 2,6-difluorobenzoic acid and dibromoisocyanuric acid in concentrated sulfuric acid, is used to prepare difluorotribromobenzoyl analogues of diflubenzuron, chlorflurazuron, teflubenzuron, and XRD-473, which on catalytic reductive debromination are converted to the corresponding potent insect growth regulators. The applicability of this reaction sequence for radiosynthesis using tritium gas is illustrated by the preparation of [benzoyl-3,4,5-³H]diflubenzuron at 60 Ci/mmol.

Descriptors/Keywords: INSECTICIDE

Record - 1204

PRELIMINARY EVALUATION OF THE INSECT GROWTH REGULATOR DIFLUBENZURON
AGAINST PECAN PESTS

TEDDERS W L

J GA ENTOMOL SOC 12 (3). 1977. 243-247.

Full Journal Title: Journal of the Georgia Entomological Society

Language: ENGLISH

ABSTRACT

In preliminary laboratory tests, diflubenzuron (N-[[[4-chlorophenyl]amino]carbonyl]-2,6-difluorobenzamide) applied as a spray to pecan seedlings at a rate of 1.19g AI [active ingredient]/l of water did not control the black margined aphid, *Monellia costalis* (Fitch), and a spider mite, *Eotetranychus hicoriae* (McGregor). However, diflubenzuron applied as a spray was evaluated at rates of 0.15 or 0.30 g AI + 1.25 ml sticker/l of water to caged pecan trees was effective in controlling the pecan weevil, *Curculio caryae* (Horn), by reducing egg hatch.

Descriptors/Keywords: MONELLIA-COSTALIS, EOTETRANYCHUS-HICORIAE, CURCULIO-CARYAE, N-C 4 CHLOROPHENYLAMINOCARBONYL-2,6-DIFLUORO BENZAMIDE, REDUCED EGG HATCH

Record - 1205

ANALYTICAL METHOD OF DIFLUBENZURON IN AGRICULTURAL PRODUCTS

TERASHI A; ETO S; TAKANO K

J FOOD HYG SOC JPN 34 (2). 1993. 114-119.

Full Journal Title: Journal of the Food Hygienic Society of Japan

Language: JAPANESE

ABSTRACT

The analytical method of diflubenzuron so far used gave poor recoveries from vegetables and fruit (0.apprx.27%). Changes in the volumes of acetone and coagulating solution did not result in constant recovery (41 .apprx. 93%), and in addition interfering peaks appeared in some cases on the high performance liquid chromatograms. Therefore, we developed a shorter method which includes hexane extraction and hexane-acetonitrile partition instead of dichloromethane extraction after clean-up by using coagulating solution, and cartridge column chromatography (Sep-Pak silica). The recovery of diflubenzuron by this method was in the range of 72-95%.

Descriptors/Keywords: VEGETABLE, FRUITS, AGRICHEMICAL, PESTICIDE RESIDUE, DETECTION, HIGH PERFORMANCE LIQUID CHROMATOGRAPHY, ANALYTICAL METHODS

Record - 1206

EFFECT OF INSECT GROWTH REGULATOR DIMILIN TH-6040 ON FECUNDITY AND EGG VIABILITY OF THE MARINE COPEPOD ACARTIA TONSA

TESTER P A; COSTLOW J D JR

MAR ECOL PROG SER 5 (3). 1981. 297-302.

Full Journal Title: Marine Ecology Progress Series

Language: ENGLISH

ABSTRACT

Studies of adult LD50 concentrations of Dimilin, an insect growth regulator which acts to inhibit chitin synthesis, are misleading when applied to arthropods which experience a terminal molt. The calanoid copepod *A. tonsa* has a determinate number of molts after which no growth occurs and the necessity of chitin production is restricted. Survival of adult *A. tonsa* held for 5 days in concentrations as high as 1000 ppb Dimilin was not significantly ($P < 0.05$) different from controls. Fecundity of *A. tonsa* was not significantly ($P < 0.05$) altered by 1-4 days treatment with 1, 10 or 100 ppb Dimilin but the hatch of viable nauplii was reduced from 90+ to < 50% in 1 ppb after 12 h treatment and to < 5% in 10 ppb after 24 h treatment. No viable nauplii were produced by females held in 1 or 10 ppb Dimilin for > 36 h. When Dimilin treatment ceased and females were placed in seawater, the effect of Dimilin was not readily reversed. No viable nauplii were produced by these females for at least the next 30 h after treatment ended.

Descriptors/Keywords: ARTHROPOD, MOLTING, LD-50, HATCHABILITY

Record - 1207

EFFECTS OF DIFLUBENZURON AND PENFLURON ON THE REPRODUCTIVE POTENTIAL OF THE ORIENTAL FRUIT FLY DACUS DORSALIS DIPTERA TEPHRITIDAE INFLUENCE OF AGE AT THE TIME OF TREATMENT ON STERILITY

THAKUR J N; KUMAR A

ENTOMON 9 (1). 1984. 19-24.

Full Journal Title: Entomon

Language: ENGLISH

ABSTRACT

Diflubenzuron and penfluron induced complete sterility in either sex of *D. dorsalis*, Hendel when applied topically to newly emerged flies at a dose of 5 .mu.g/fly. However, Fertility recovered as the post-treatment days increased. In cross combinations, where either male, female or both were treated, egg

laying was delayed by 3-13 days as compared to controls. Recovery of fertility was faster in diflubenzuron treated flies than penfluron treated flies. Also, the flies treated at emergence remained sterile for longer periods than flies treated at maturity. Per cent egg hatch and corrected per cent sterility in flies treated at maturity for the first and subsequent 7 wk and per cent egg hatch of successive egg batches in flies treated on emergence showed that penfluron was more effective than diflubenzuron.

Descriptors/Keywords: INSECT GROWTH REGULATORS, RECOVERY

Record - 1208

OVICIDAL EFFECT OF DIFLUBENZURON ON ASH WEEVIL MYLLOCERUS UNDECIMPUSTULATUS MACULOSUS

THANGAVELU K

CURR SCI (BANGALORE) 51 (8). 1982. 439-440.

Full Journal Title: Current Science (Bangalore)

Language: ENGLISH

Descriptors/Keywords: NOTE, GOSSYPIUM-BARBADENSE, MOLTING INHIBITOR, INDIA

Record - 1209

HEMOLYMPH ANALYSIS OF IRRADIATED AND DIMILIN TREATED BOLL WEEVILS ANTHONOMUS GRANDIS

THOMPSON A C; SIKOROWSKI P P

J INVERTEBR PATHOL 39 (2). 1982. 158-163.

Full Journal Title: Journal of Invertebrate Pathology

Language: ENGLISH

ABSTRACT

Analyses were conducted to determine the effects of irradiation, chemosterilization with Dimilin (diflubenzuron) and infection with 3 strains of *Staphylococcus aureus* on the chemistry of the hemolymph of adult boll weevils, *A. grandis*. The 7-fold decrease of Na in the blood was associated with the loss of nerve conductivity and resultant decrease in muscular activity of .gamma.-irradiated and Dimilin-fed 5-day and 8-day-old adult weevils. Concomitantly, Mg increased 4-fold and Ca increased 2-fold. Blood enzyme levels increased 40-60% in all treatments. Alkaline phosphatase increased 2-fold and serum glutamic oxalacetic transaminase 2000-fold in the hemolymph of day-old adults infected with *S. aureus*.

Descriptors/Keywords: STAPHYLOCOCCUS-AUREUS, CHEMO STERILIZATION, DIFLUBENZURON, NERVE CONDUCTION, MUSCLE, DIET, MAGNESIUM, CALCIUM, ALKALINE, PHOSPHATASE, SERUM, GLUTAMIC OXAL ACETIC TRANS AMINASE

Record - 1210

THOMPSON-HAYWARD CHEMICAL CO. 1982. RESIDUE DATA: DIMILIN (R). COMPILATION. UNPUBLISHED STUDY, INCLUDING PUBLISHED DATA, RECEIVED MAR. 12, 1982 UNDER 148-EX-26. .

Record - 1211

THOMPSON-HAYWARD CHEMICAL CO. 1981. NON-TARGET EFFECTS. COMPILATION. UNPUBLISHED STUDY RECEIVED APR. 30, 1981 UNDER 148-1268.

Record - 1212

THOMPSON-HAYWARD CHEMICAL CO. 1979. RESIDUE DATA: DIMILIN. COMPILATION . UNPUBLISHED STUDY RECEIVED FEB. 13, 1979, UNDER 148-EX-26.

Record - 1213

THOMPSON-HAYWARD CHEMICAL CO. 1978. ANALYTICAL METHODOLOGY DIFLUBENZURON. SUMMARY OF STUDIES 096194-F, 0977390D THROUGH 097739-G AND 097739-I. UNPUBLISHED STUDY RECEIVED DEC. 15, 1978 UNDER 148-EX-26.

Record - 1214

THOMPSON-HAYWARD CHEMICAL CO. 1978. DIMILIN CHITIN INHIBITOR. BREAKTHROUGH IN PEST CONTROL. KANSAS CITY, KS. UNPUBLISHED STUDY RECEIVED MAR. 15, 1978 UNDER 148-1259.

Record - 1215

THOMPSON-HAYWARD CHEMICAL CO. 1978. NON TARGET DATA. DIMILIN W-25 UNPUBLISHED STUDY RECEIVED FEB. 13, 1979., UNDER 148-EX-26.

Record - 1216

THOMPSON-HAYWARD CHEMICAL CO. 1978. WORST CASE RISK ESTIMATE FROM EXPOSURE TO DIMILIN FROM AERIAL SPRAYING. UNPUBLISHED STUDY RECEIVED MAR. 9, 1981 UNDER 148-1258.

Record - 1217

THOMPSON-HAYWARD CHEMICAL CO. 1978. ANALYTICAL METHODOLOGY. SUMMARY OF STUDIES 070051-D THROUGH 070051-F AND 070051-H THROUGH 070051-K. UNPUBLISHED STUDY RECEIVED APR. 30, 1981 UNDER 1548-1268.

Record - 1218

THOMPSON-HAYWARD CHEMICAL CO. 1978. RESIDUE DATA: DIFLUBENZURON. COMPILATION. UNPUBLISHED STUDY RECEIVED DEC. 15, 1978 UNDER 148-EX-25.

Record - 1219

THOMPSON-HAYWARD CHEMICAL CO. 1977. INTRODUCTION: DIMILIN EXPERIMENTAL INVESTIGATIONS. COMPILATION. UNPUBLISHED STUDY RECEIVED JUNE 22, 1977 UNDER 6F1773.

Record - 1220

THOMPSON-HAYWARD CHEMICAL CO. 1977. ADDITIONAL NON-TARGET, ENVIRONMENTAL CHEMISTRY AND FISH AND WILDLIFE DATA. UNPUBLISHED STUDY RECEIVED JUNE 22, 1977 UNDER 6F1773.

Record - 1221

THOMPSON-HAYWARD CHEMICAL CO. 1976. ANALYTICAL METHODOLOGY: DIMILIN W-25 FOR COTTON BOLL WEEVIL CONTROL. UNPUBLISHED STUDY RECEIVED DEC. 23, 1976 UNDER 148-1258.

Record - 1222

THOMPSON-HAYWARD CHEMICAL CO. 1976 APPLICATION FOR FULL REGISTRATION OF DIMILIN (TM) W-25 FOR MOSQUITO LARVAE CONTROL: DEGRADATION/PERSISTENCY DATA. SUMMARY OF STUDIES 096219-B THROUGH 096219-E AND 096220-A THROUGH 096220-M UNPUBLISHED STUDY RECEIVED APRIL 7, 1976 UNDER 148-1259. .

Record - 1223

THOMPSON-HAYWARD CHEMICAL CO. 1976. TUSsock Moth AND FALSE HEMLOCK LOOPER EXPERIMENTAL SPRAY PROGRAM (TH-60-40--CHLORINATED UREA): EVALUATION OF THE EFFECTS OF THIS CHEMICAL UPON THE SMALL MAMMALS OF THE KAMLOOPS AREA. UNPUBLISHED STUDY RECEIVED APR. 7, 1976 UNDER 148-1259.

Record - 1224

THOMPSON-HAYWARD CHEMICAL CO. 1976. EFFECTS ON NON-TARGET ORGANISMS: DIMILIN W-25. SUMMARY OF STUDIES 094069-B THROUGH 094969-M. UNPUBLISHED STUDY RECEIVED FEB. 10, 1976 UNDER 6G1744.

Record - 1225

THOMPSON-HAYWARD CHEMICAL CO. 1976. METABOLISM. DIMILIN W-25. SUMMARY OF STUDIES 095646-C, 095646-F, 095660-C, 095665-I, 095666-A, 095666-B, 095666-E, 095666-J, 095666-L, 0962000-B, 096202-E, 096204-L, 096204-N, 096204-O, 096198-D, 096198-E, 225303-B, 225303-F, 225303-G. UNPUBLISHED STUDY RECEIVED DEC. 23, 1976 UNDER 148-1258.

Record - 1226

THOMPSON-HAYWARD CHEMICAL CO. 1976. NON-TARGET PHYTOTOXICITY DATA. SUMMARY OF STUDIES 095649-C, 095650-A, 095650-B, 095650-K, 095652-K, 095652-L, 096205-B THROUGH 096205-F, 096206-D, 096206-E 096206-I, 096206-M, 096207-D, 096207-F, 225301-B, 225304-G, 225309-A THROUGH 22530. UNPUBLISHED STUDY RECEIVED DEC. 23, 1976 UNDER 148-1258.

Record - 1227

THOMPSON-HAYWARD CHEMICAL CO. 1976. RESIDUE REPORT: BEEF, POULTRY TISSUES. RESIDUE TEST NO. 1072. UNPUBLISHED STUDY RECEIVED APR. 7, 1976 UNDER 148-1259. PREPARED BY CANNON LABORATORIES, INC.

Record - 1228

THOMPSON-HAYWARD CHEMICAL CO. 1976. RESIDUES OF TH-6040 EQUIVALENTS IN COTTON AND ROTATIONAL CROPS FOLLOWING FOLIAR APPLICATION. UNPUBLISHED STUDY RECEIVED FEB. 10, 1976 UNDER 6G1744.

Record - 1229

THOMPSON-HAYWARD CHEMICAL CO. 1976. METHOD 15A; GAS-LIQUID CHROMATOGRAPHIC DETERMINATION OF RESIDUES OF DIFLUBENZURON, 4-CHLOROPHENYLUREA, AND 4-CHLOROANILINE IN COW TISSUES, POULTRY TISSUE, EGG, MILK, FISH. SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., UNER PP#7F1898; IN: PAM, VOLUME II, PESTICIDE REG. SEC. 180.377 METHOD II.

Record - 1230

THOMPSON-HAYWARD CHEMICAL CO. 1976. ANALYTICAL METHODOLOGY: DIFLUBENZURON. SUMMARY OF STUDIES 096194-C, 096194-E THROUGH 096194-H, 096200-B, 096200-C, 096198-D, 096198-E, 225303-B, 096204-L AND 096204-N. UNPUBLISHED STUDY RECEIVED JULY 19, 1976 UNDER 148-1262.

Record - 1231

THOMPSON-HAYWARD CHEMICAL CO. 1976. RESIDUE DATA: DIFLUBENZURON. COMPILATION; UNPUBLISHED STUDY RECEIVED DEC. 23, 1976 UNDER 148-1258.

Record - 1232

THOMPSON-HAYWARD CHEMICAL CO. 1975. EFFECTS ON NON-TARGET ORGANISMS: DIMILIN W-25. SUMMARY OF STUDIES 225309-A THROUGH 225309-J. UNPUBLISHED STUDY RECEIVED JAN. 12, 1976 UNDER 148-1170. .

Record - 1233

THOMPSON-HAYWARD CHEMICAL CO. 1975. EFFICACY OF DIMILIN AND RO 20-2600. COMPILATION, UNPUBLISHED STUDY RECEIVED FEB. 7, 1977 UNDER UNKNOWN ADMIN. NO.

Record - 1234

THOMPSON-HAYWARD CHEMICAL CO. 1975. FISH AND WILDLIFE DATA: TH-6040 (DIFLUBENZURON). SUMMARY OF STUDIES 225304-B THROUGH 225304-G, 225306-D, 225306-G, 22306-H, 225306-J THROUGH 225306-M, 225309-A THROUGH 225309-G, 225930-D, 225930-E AND 225932-N. UNPUBLISHED STUDY RECEIVED JAN. 12, 1976 UNER 148-1170. .

Record - 1235

THOMPSON-HAYWARD CHEMICAL CO. 1975. UNIFIED FIELD EVALUATION PROJECT: TH6040. UNPUBLISHED STUDY RECEIVED JAN. 29, 1975. UNDER 148-EX-18.

Record - 1236

THOMPSON-HAYWARD CHEMICAL CO. 1975. RESIDUES OF TH-6040 EQUIVALENTS IN COTTON AND ROTATIONAL CROPS FOLLOWING FOLIAR APPLICATION. UNPUBLISHED STUDY RECEIVED DEC. 23, 1976 UNDER 148-1258.

Record - 1237

THOMPSON-HAYWARD CHEMICAL CO. 1975. CHEMISTRY OF LARGON 25W AND 5 E C: SUMMARY. NTP-64. UNPUBLISHED STUDY RECEIVED FEB. 7, 1977 UNDER UNKNOWN ADMIN. NO.).

Record - 1238

THOMPSON-HAYWARD CHEMICAL CO. 1974. EFFICACY AND TOXICITY: LARGON ON SUNFISH CRAYFISH, MOSQUITO. COMPILATION, UNPUBLISHED STUDY RECEIVED FEB. 7, 1977 UNDER UNKNOWN ADMIN. NO.

Record - 1239

THOMPSON-HAYWARD CHEMICAL CO. 197?. RESIDUE DATA AND METHODOLOGY: DIMILIN W-25. SUMMARY OF STUDIES 096221-G AND 096223-P. UNPUBLISHED STUDY RECEIVED APR. 7, 1976 UNDER 148-1259. .

Record - 1240

RELATIONSHIP BETWEEN GYPSY MOTH LEPIDOPTERA LYMANTRIIDAE PHEROMONE TRAP CATCH AND POPULATION DENSITY COMPARISON OF TRAPS BAITED WITH 1 AND 500 MICRO DEXTRO DISPARLURE LURES

THORPE K W; RIDGWAY R L; LEONHARDT B A

J ECON ENTOMOL 86 (1). 1993. 86-92.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

The relationship between the number of male gypsy moths *Lymantria dispar* (L.), captured in pheromone traps and subsequent egg-mass density in the area surrounding each pheromone trap was determined for traps baited with either 1 or 500 .mu.g of (+)-disparlure. Traps were located along transects that extended from within diflubenzuron-treated spray blocks, in which gypsy moth populations were low (252.0 egg masses per ha), to adjoining areas with high populations (3,390.4 egg masses per ha) that had either been treated with *Bacillus thuringiensis* Berliner or left untreated and that were associated with defoliation of oak, *Quercus* spp. Traps containing low-dose lures captured means of 5.4 and 32.9 moths in the low and high gypsy moth population density areas, respectively. Traps containing high-dose lures captured means of 431.1 and 874.4 moths in the low and high density areas. Trap captures for both lure doses were significantly correlated with subsequent egg-mass density. Numbers of surviving female pupae under burlap averaged 0.16 and 1.11 per cm in the low- and high-population density areas, respectively. Pupal numbers were also significantly correlated with subsequent egg-mass density. Functional relationships between trap catches and subsequent egg-mass densities for traps containing low- and high-dose lures are given, which explain 60 and 65% of the variation, respectively.

Descriptors/Keywords: LYMANTRIA-DISPAR, BACILLUS-THURINGIENSIS, QUERCUS-SPP, INSECT, PLANT, BACTERIA, MICROORGANISM, FORESTRY PEST, DIFLUBENZURON, INSECTICIDE, CHEMICAL CONTROL, BIOLOGICAL CONTROL

Record - 1241

EFFECTS OF REDUCED RATES OF DIPEL 4L DYLOX 1.5 OIL AND DIMILIN W-25 ON LYMANTRIA DISPAR LEPIDOPTERA LYMANTRIIDAE PARASITISM AND DEFOLIATION

TICEHURST M; FUSCO R A; BLUMENTHAL E M

ENVIRON ENTOMOL 11 (5). 1982. 1058-1062.

Full Journal Title: Environmental Entomology

Language: ENGLISH

ABSTRACT

Reduced rates of Dipel 4L, Dylox 1.5 oil and Dimilin W-25 were applied to an outbreak infestation of *L. dispar* (L.) in 1980. Treatment effects were investigated on larvae, pupae, adult males and egg masses as well as on parasitism and defoliation in 1980 and partially in 1981. Treatment effects for Dimilin were not reported because of improper aerial application. Dipel and Dylox provided excellent foliage protection in 1980 and reduced populations of stages of I-III by 87 and 38%, respectively. Enhancement of parasitism by *Apanteles melanoscelus* (Ratzeburg) (Hymenoptera: Braconidae) was most apparent in blocks treated with Dipel. Other positive and negative effects on parasitism were detected by both insecticides.

Descriptors/Keywords: APANTELES-MELANOSCELUS, INSECTICIDE

Record - 1242

EFFECT OF DIFLUBENZURON DIMILIN TREATMENT ON THE HEMOLYMPH PROTEINS OF
DIACRISIA OBLIQUA WALKER

TIWARI L D

INDIAN J ENTOMOL 51 (2). 1989 (1990). 163-166.

Full Journal Title: Indian Journal of Entomology

Language: ENGLISH

ABSTRACT

The present work reports the effect of diflubenzuron on the 5th instar larve of Diacrisia obliqua Walker. The topical application of diflubenzuron gave LD50 value 0.0.07 .mu.g a.i. per larva and also produced larval-pupal intermediates. There was reduction in the total haemolymph protein (HP) and a few new proteins were produced due to diflubenzuron intoxication.

Descriptors/Keywords: MUTAGEN, INSECTICIDE, LARVAL PUPA INTERMEDIATE
DEVELOPMENTAL DEFECT

Record - 1243

INFLUENCE OF DIFLUBENZURON ON SURVIVAL MOLTING AND LIMB REGENERATION IN
THE GRASS SHRIMP PALAEMONETES PUGIO

TOUART L W; RAO K R

VERNBERG, W. B., ET AL. (ED.). THE BELLE W. BARUCH LIBRARY IN MARINE SCIENCE,
NO. 17. POLLUTION PHYSIOLOGY OF ESTUARINE ORGANISMS; SYMPOSIUM,
GEORGETOWN, SOUTH CAROLINA, USA, OCTOBER 21-24, 1985. XIII+458P. UNIVERSITY
OF SOUTH CAROLINA PRESS: COLUMBIA, SOUTH CAROLINA, USA. ILLUS. ISBN
0-87249-510-8. 0 (0). 1987. 333-350.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: INSECTICIDE, INDICATOR ORGANISM

Record - 1244

POPULATION DEVELOPMENT AND REPRODUCTION OF FUNGUS FEEDING AND BACTERIUM
FEEDING NEMATODES IN THE PRESENCE OF INSECT GROWTH REGULATORS

TOWNSHEND J L; PREE D J; BROADBENT A B

J NEMATOL 15 (1). 1983. 105-110.

Full Journal Title: Journal of Nematology

Language: ENGLISH

ABSTRACT

The insect growth regulators (IGRs), diflubenzuron and BAY SIR 8514, at 300 and 1000 ppm a.i. [active ingredient] in potato dextrose agar (PDA) inhibited the radial growth of the fungus Rhizoctonia solani host of Aphelenchus avenae. The IGRs had no effect on the growth of the bacterium Pseudomonas pseudoalcaligenes host of Acrobelloides nanus and Diplogaster iheritieri. At 50 ppm a.i., neither IGR inhibited the population development of A. nanus and D. iheritieri on P. pseudoalcaligenes; diflubenzuron stimulated the population development of D. iheritieri. At 300 ppm, both IGRs inhibited the population development of A. nanus and D. iheritieri; however, BAY SIR 8514 was more effective than diflubenzuron except on A. nanus L4's [larval stage 4]. At 300 ppm, only BAR SIR 8514 affected the population development of A. avenae, except the L4's. At 1000 Again, BAY SIR 8514 was more effective than diflubenzuron. With single females of A. nanus and D. iheritieri, both the IGRs at 300 ppm reduced egg laying, inhibited embryonation, and slowed larval development.

Descriptors/Keywords: RHIZOCTONIA-SOLANI, APHELENCHUS-AVENAE, PSEUDOMONAS-

PSEUDOALCALIGENES, ACROBELOIDES-NANUS, DIPLOGASTER-IHERITIERI, POTATO,
DEXTROSE AGAR, DIFLUBENZURON, BAY SIR 8514, LARVAL DEVELOPMENT

Record - 1245

AN ATTEMPT TO PEAR SUCKER MANAGEMENT IN THE NETHERLANDS

TRAPMAN M; BLOMMERS L

J APPL ENTOMOL 114 (1). 1992. 38-51.

Full Journal Title: Journal of Applied Entomology

Language: ENGLISH

ABSTRACT

Increasing problems with pear sucker control in pear orchards treated with broad-spectrum insecticides in 1980-1984, induced us to try an alternative approach. More selective compounds, viz. fenoxycarb on leafrollers, diflubenzuron on codling moth and pirimicarb on green aphids were applied in 4 pilot orchards. This permitted apparently a quick recovery of the natural control of the pear suckers *Psylla pyri* and *P. pyricola*, as, after an initial and not very effective application of DNOC, this pest did not need any further chemical control for 2 years in succession. *P. pyri* was the more abundant species in this trial. Regular sampling revealed that *P. pyricola* disperses more during the winter season, and starts reproducing slightly later in spring, but winter survival appeared to be similar in both species. Most pear sucker nymphs of the first generation emerged around the first half of May, those of the second in early July, respectively. Overwintered pirate bug adults (*Anthocoris nemoralis*), and their first progeny were scored during the former period, while the second generation juveniles were emerging during the latter. At the second occasion, more pirate bug nymphs were found in localities with more pear sucker nymphs, indicating a numerical response by the parent generation. The subsequent rapid breakdown of the various pear sucker populations indicated that *A. nemoralis* is a major antagonist of the pest, also in this country. The predatory effects of other potential antagonists, like spiders, could not be singled out, but the occasional outbreak of pear suckers in some mildly treated orchards hinted at the common earwig *Forficula auricularia* as another antagonist. Although this trial shows that chemical control of the pear sucker can be replaced largely by natural control, there is more work to do before other pear pests can be remedied with means that spare the responsible pirate bug.

Descriptors/Keywords: PSYLLA-PYRI, PSYLLA-PYRICOLA, ANTHOCORIS-NEMORALIS, FORFICULA-AURICULARIA, FENOXYCARB, DIFLUBENZURON, PIRIMICARB, INSECTICIDES, ABUNDANCE, DISPERSAL, SEASONALITY, EMERGENCE, DEVELOPMENT, BIOLOGICAL CONTROL

Record - 1246

EVALUATION OF DIFLUBENZURON FOR BOLL WEEVIL CONTROL IN SHORT-SEASON COTTON

TREACY M F; BENEDICT J H; PARKER R D

TEX AGRIC EXP STN PROG REP 0 (4532). 1987. 1-7.

Full Journal Title: Texas Agricultural Experiment Station Progress Report

Language: ENGLISH

ABSTRACT

Three studies conducted on farms located in the Lower Gulf Coast region of Texas [USA] showed that multiple early-season applications of diflubenzuron were effective in controlling light to moderate boll weevil, *Anthonomus grandis* Boheman, infestations in dryland, short-season cotton. Additionally, diflubenzuron moderately decreased densities of cotton fleahoppers, *Pseudatomoscelis seriatus* (Reuter), in cotton and caused no decrease in the abundance of beneficial arthropods.

Descriptors/Keywords: ANTHONOMUS-GRANDIS, PSEUDATOMOSCELIS-SERIATUS, ARTHROPODS, INSECTICIDE, TEXAS USA

Record - 1247

PLASTICITY OF THE ENDOPLASMIC RETICULUM IN THREE CELL TYPES OF SLUGS
POISONED BY MOLLUSCICIDES

TRIEBSKORN R; KOEHLER H-R

PROTOPLASMA 169 (3-4). 1992. 120-129.

Full Journal Title: Protoplasma

Language: ENGLISH

ABSTRACT

In three cell types of slug [*Deroceras reticulatum* and *Arion lusitanicus*] tissue-the crypt, mucous and storage cell - ultrastructural alterations of the endoplasmic reticulum (ER) can be induced by oral application of the pesticides. Cloethocarb, metaldehyde, or Dimilin. In the crypt cells of the hepatopancreas, the narrow-luminal cisternae of the rough endoplasmic reticulum which are parallelly arranged in controls get slightly dilated, vesiculated and form circular arrays. Intermediate stages between narrow luminal, vesiculated and circularly arranged ER can be observed. In the mucous cells of the skin and the stomach, the wide-luminal cisternae of the rough endoplasmic reticulum the lumen of which contains tubular-like structures become heavily dilated. Also in this cell type, intermediate stages between dilated cisternae without tubular-like structures and non-dilated cisternae can be observed. In the storage cells of the crop, in which lipid storage is reduced after molluscicide application, the formation of a special type of ER characterized by locally enlarged ER-cisternae, broken through by several cytoplasmic strings, becomes obvious.

Descriptors/Keywords: DEROCERAS-RETICULATUM, ARION-LUSITANICUS, CRYPT CELL, MUCOUS CELL, STORAGE CELL, CLOETHOCARB, METALDEHYDE, DIMILIN, ROUGH ENDOPLASMIC RETICULUM

Record - 1248

HISTOLOGICAL LOCALIZATION ASSAYS FOR DIFLUBENZURON IN PIERIS RASSICAE
LARVA LEPIDOPTERA BY SECONDARY ION MICRO ANALYSIS

TRUCHET M; LAUVERJAT S; LAMY M; DENNEULIN J C

PESTIC BIOCHEM PHYSIOL 15 (3). 1981. 253-256.

Full Journal Title: Pesticide Biochemistry and Physiology

Language: ENGLISH

ABSTRACT

No histochemical reaction is available to localize diflubenzuron in tissues. The insecticide can be localized in *Pieris* tissues by its fluoride atoms, used as tracers in secondary ion microanalysis, which is very sensitive for such light elements. In diflubenzuron-treated insects, especially in females, fluoride intensities are much higher than in controls; images demonstrate a wide distribution of the insecticide in the insect tissues. Besides target organs, i.e., epidermis, diflubenzuron is present in other tissues, such as fat bodies, which may be related to the general metabolic effects and to a detoxification of the insecticide.

Descriptors/Keywords: FLUORIDE, ATOM, EPIDERMIS, FAT, BODY, DE TOXIFICATION

Record - 1249

INSECTICIDAL EFFECT OF DIFLUBENZURON AGAINST COCKROACHES

TSUJI H; TANEIKE Y

JPN J SANIT ZOOL 39 (1). 1988. 19-25.

Full Journal Title: Japanese Journal of Sanitary Zoology

Language: ENGLISH

ABSTRACT

Laboratory tests were conducted to evaluate the potential activity of diflubenzuron, an insect growth regulator, to control cockroaches. In first-instar nymphs of *Blattella germanica*, 100% mortality was

obtained with filter-paper harborage treated with a water suspension of 20 ppm or more active ingredient (a.i.) concentration. However, the nymphs fed on animal-food powder containing 100 ppm a.i. were not killed completely. The effects of diflubenzuron residually applied to harborage were also demonstrated against first-instar nymphs of *Periplaneta americana* as well as against final-instar nymphs of *B. germanica*. Topical applications to final-instar nymphs of *B. germanica* were also effective. The age of the greatest sensitivity of first-instar nymphs of *P. americana* was about 4 days before ecdysis, and that of final-instar nymphs of *B. germanica* was from 3 to 6 days before their final ecdysis at 26.degree. C, during which a single-day exposure to treated harborage was enough to kill them all. The exposure of parent cockroaches to treated harborage showed substantial ovicidal effect in *B. germanica*.

Descriptors/Keywords: BLATTELLA-GERMANICA, PERIPLANETA-AMERICANA, NYMPH, OVICIDAL EFFECT, ECDYSIS

Record - 1250

TSUZUKI, H. AND T. ASAYAMA. 1983. INFLUENCE OF DIFLUBENZURON ON OVIPOSITION AND HATCHING IN THE RICE WATER WEEVIL, LISSORHOPTRUS ORYZOPHILUS KUSCHEL (COLEOPTERA: CURCULIONIDAE). JAPANESE J. OF APPLIED ENTOMOL. AND ZOOL. 27(3): 229-231.

Record - 1251

TUCKER, R. AND R. STEVENS. 1978. RISK ANALYSIS OF DIMILIN AND ALTERNATIVES FOR AQUATIC AND TERRESTRIAL WILDLIFE--COTTON, SOYBEANS, HARDWOOD FORESTS AND MOSQUITO CONTROL. UNPUBLISHED STUDY PREPARED BY US ENVIRONMENTAL PROTECTION AGENCY. 324 PP.

Record - 1252

INTEGUMENTAL CHITIN SYNTHASE EC-2.4.1.16 ACTIVITY IN CELL-FREE EXTRACTS OF LARVAE OF THE AUSTRALIAN SHEEP BLOW FLY LUCILIA CUPRINA AND 2 OTHER SPECIES OF DIPTERA

TURNBULL I F; HOWELLS A J

AUST J BIOL SCI 36 (3). 1983. 251-262.

Full Journal Title: Australian Journal of Biological Sciences

Language: ENGLISH

ABSTRACT

Chitin synthase activity was demonstrated in crude homogenates of larval integuments from *L. cuprina* and in similar preparations from *Musca domestica* and *Calliphora erythrocephala*. This is the 1st report of an insect integumental chitin synthase. This activity brings about the incorporation of radioactivity from UDP-N-acetyl-[14C]glucosamine into an ethanol- and alkali-insoluble form. A major part of this labeled product has been characterized as chitin by its insolubility in alkali, resistance to degradation by proteases and its susceptibility to digestion by chitinase and HCl. Most of the radioactivity solubilized during digestion by chitinase co-migrates with N-acetylglucosamine, glucosamine and chitobiose during paper chromatography. Some radioactivity also becomes incorporated into non-chitin products in this system. There is substantial evidence that incorporation is not brought about by whole epidermal cells or by microbial contamination in the homogenates. The extent of incorporation obtained with the homogenates is limited by the presence of degradative enzymes which rapidly break down the substrate (UDP-N-acetylglucosamine). The incorporation was partially inhibited (50-70%) by both polyoxin-D (apparent K_i 0.04 μ M) and diflubenzuron (apparent K_i 5-8 μ M). This is the 1st report of a cell-free chitin-synthesizing system derived from insect tissue which is sensitive to inhibition by diflubenzuron.

Descriptors/Keywords: MUSCA-DOMESTICA, CALLIPHORA-ERYTHROCEPHALA, PROTEASE, CHITINASE, DIFLUBENZURON, CHROMATOGRAPHY RADIO LABEL

Record - 1253

EFFECTS OF SEVERAL LARVICIDAL COMPOUNDS ON CHITIN BIOSYNTHESIS BY ISOLATED LARVAL INTEGUMENTS OF THE SHEEP BLOW FLY LUCILIA CUPRINA
TURNBULL I F; HOWELLS A J

AUST J BIOL SCI 35 (5). 1982. 491-504.

Full Journal Title: Australian Journal of Biological Sciences

Language: ENGLISH

ABSTRACT

Isolated whole integuments from *L. cuprina* larvae rapidly incorporate radioactivity from both N-acetyl[1-14C]glucosamine and [1-14C]glucosamine into alkali-insoluble material, a reaction which does not require preincubation of the tissue with .beta.-ecdysone. The labeled product was degraded to N-acetylglucosamine during digestion with chitinase, establishing that it consists mainly of chitin. Incorporation was inhibited by polyoxin-D (I50 [median inhibition], 6 .times. 10-7 M) and diflubenzuron (I50, 7 .times. 10-7 M) but was not inhibited to any marked extent by isoprothiolane, Vetrazine or .alpha.-methyl-dopa. The effectiveness of diflubenzuron as an inhibitor of chitin synthesis in this system (I50, 7 .times. 10-7 M) correlates well with its potency as a larvicide (LD50, 2.1.times. 10-6 M), providing additional support for the proposal that this compound kills larvae by interfering with chitin deposition in the cuticle. Polyoxin D was much more effective as an inhibitor of chitin synthesis (I50, 6 .times. 10-7 M) than as a larvicide (LD50, 2.0 .times. 10-5 M). The final intermediate of chitin biosynthesis (UDP-N-acetylglucosamine) was formed in the isolated integuments in the presence of diflubenzuron and polyoxin D. Both compounds apparently interfere with the final polymerization step of the chitin biosynthesis pathway.

Descriptors/Keywords: CHITINASE, N ACETYL GLUCOSAMINE, RADIOACTIVITY, POLYOXIN D, ISOPROTHIOLANE, DIFLUBENZURON, VETRAZIN, ALPHA METHYL DOPA, METABOLIC-DRUG, POLYMERIZATION LD-50

Record - 1254

LARVICIDAL ACTIVITY OF CHITIN SYNTHESIS INHIBITORS IN LUCILIA CUPRINA
TURNBULL I F; HOWELLS A J

ANNUAL MEETING OF THE AMERICAN SOCIETY OF ZOOLOGISTS, AMERICAN MICROSCOPICAL SOCIETY, AMERICAN SOCIETY OF LIMNOLOGY AND OCEANOGRAPHY, ANIMAL BEHAVIOR SOCIETY, CANADIAN SOCIETY OF ZOOLOGISTS, ECOLOGICAL SOCIETY OF AMERICA, SOCIETY OF SYSTEMATIC ZOOLOGY, AND THE WESTERN SOCIETY OF NATURALISTS, SEATTLE, WASH., USA, DEC. 27-30, 1980. AM ZOOL 20 (4). 1980 912.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: ABSTRACT, DIFLUBENZURON, POLYOXIN D, MOLT, RADIO LABEL, CHITINASE

Record - 1255

THE EFFECTS OF DOPA DECARBOXYLASE INHIBITORS ON THE PERMEABILITY AND ULTRASTRUCTURE OF THE LARVAL CUTICLE OF THE AUSTRALIAN SHEEP BLOW FLY LUCILIA CUPRINA

TURNBULL I F; PYLIOTIS N A; HOWELLS A J

J INSECT PHYSIOL 26 (8). 1980. 525-532.

Full Journal Title: Journal of Insect Physiology

Language: ENGLISH

ABSTRACT

Larvae of *L. cuprina*, fed toxic levels of .alpha.-methyl dopa (or other dopa decarboxylase inhibitors) during the 1st or 2nd instar, die at the completion of the next molt, soon after exposing their new cuticles. In electron micrographs of newly synthesized cuticle from these treated larvae, the ultrastructure of the lipid-rich outer epicuticle layer appears abnormal. This newly formed cuticle of the treated larvae is defective in its role as a water permeability barrier (compared with that of normal larvae), since it permits the free movement of water in both directions. Treated larvae die as a direct result of dehydration. Larvae fed toxic levels of .alpha.-methyl dopa can be rescued from death by simultaneously adding N-acetyldopamine (the cuticular sclerotizing agent) to the food. The rescued larvae are normal in all respects. Sclerotization is required for the formation of a normal outer epicuticle. Diflubenzuron, which inhibits chitin deposition in the cuticles of a number of different species of insect, also affects chitin deposition in the larval cuticle of *L. cuprina*. In electron micrographs of cuticle from larvae fed toxic levels of diflubenzuron the ultrastructure of the chitin-containing endocuticle layer appears abnormal.

Descriptors/Keywords: N ACETYL DOPAMINE, SCLEROTIZING AGENT, DIFLUBENZURON, MOLT, LIPID, WATER, PERMEABLE, DEHYDRATION, CHITIN DEPOSITION, ELECTRON MICROGRAPH, ENDO CUTICLE

Record - 1256

CHEMICAL CONTROL OF GRAM POD BORER HELIOTHIS ARMIGERA HUBNER ON CHICKPEA *UJAGAIR R; KHARE B P*

AGRIC BIOL RES 4 (2). 1988. 36-40.

Full Journal Title: Agricultural and Biological Research

Language: ENGLISH

ABSTRACT

Comparative efficacy of synthetic pyrethroid, fenvalerate, chitin inhibitor, diflubenzuron along with eight other insecticides, namely, monocrotophos, endosulfan, quinalphos carbaryl phosalone, fenitrothion, ambithion and leptophos were tested against gram pod borer, *Heliothis armigera* (Hubner) on chickpea. Monocrotophos carbaryl, endosulfan, leptophos, fenvalerate and phosalone gave better performance in controlling the *Heliothis*. Diflubenzuron, fenitrothion, ambithion and quinalphos were comparatively less effective in reducing pod borer damage. However, quinalphos recorded higher grain yield as other treatments.

Descriptors/Keywords: FENVALERATE, DIFLUBENZURON, MONOCROTOPHO, ENDOSULFAN, QUINALPHOS, CARBARYL, PHOSPHALONE, FENITROTHION, AMBITHION, LEPTOPHOS, INSECTICIDE

Record - 1257

U. S. AGRICULTURAL RESEARCH SERVICE. 1976. EFFECT OF DIFLUBENZURON ON BENEFICIAL ARTHROPODS ASSOCIATED WITH COTTON. ARS. COTTON INSECT RESEARCH LAB.

Record - 1258

U. S. AGRICULTURAL RESEARCH SERVICE. 1976. RESIDUES OF DIMILIN IN COTTON. COTTON INSECTS RESEARCH LABORATORY. PRELIM. REPT. UNPUBLISHED STUDY.

Record - 1259

U. S. ENVIRONMENTAL PROTECTION AGENCY. 1987 PESTICIDE FACT SHEET: DIFLUBENZURON.

Record - 1260

U. S. ENVIRONMENTAL PROTECTION AGENCY. 1985. CASE NUMBER 144 GUIDANCE FOR THE REREGISTRATION OF MANUFACTURING-USE AND CERTAIN END-USE PESTICIDE PRODUCTS CONTAINING - DIFLUBENZURON (108201). CAS 35367-38-5 EPA OFFICE OF PESTICIDE PROGRAMS WASHINGTON, D.C. 20460.

Record - I261

U. S. ENVIRONMENTAL PROTECTION AGENCY. 1984. TOXID CHEMICAL NO. 346A-DIFLUBENZURON (TOX ONE-LINER). EPA, OFFICE OF PESTICIDE PROGRAMS, WASHINGTON, DC 8 PP. FILE LAST UPDATED 11/13/84.

Record - I262

U. S. FOREST SERVICE. 1984. GYPSY MOTH SUPPRESSION AND ERADICATION PROJECTS. DRAFT SUPPLEMENT TO THE FINAL ENVIRONMENTAL IMPACT STATEMENT.

Record - I263

U. S. FOREST SERVICE. 1975. EVALUATION OF DIMILIN AGAINST THE GYPSY MOTH AND EFFECTS ON NON-TARGET ORGANISMS. (NORTHEAST AREA STATE AND PRIVATE FORESTRY, EXPANDED GYPSY MOTH RESEARCH AND APPLICATIONS PROGRAM). UNPUBLISHED STUDY.

Record - I264

UNION CARBIDE CORP. 1976. THE EFFECTS OF THE MOSQUITO LARVACIDE DIMILIN ON THE FRESHWATER ENVIRONMENT OF THREE TEST PONDS IN ARKANSAS. UNPUBLISHED STUDY RECEIVED APR. 7, 1976 UNDER I48-1259; SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - I265

UNION CARBIDE CORP. 1976. ACUTE TOXICITY OF DIMILIN W-25 TO ANODONTA SP., MERCENARIA MERCENARIA, UCA PUGILATOR, CARCINUS MAENAS. UNPUBLISHED STUDY RECEIVED APR. 7, 1976 UNDER I48-1259. SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - I266

UNION CARBIDE CORP. 1976. IMPACT OF CHEMICAL AND MICROBIAL CONTROL APPLICATIONS IN THE FOREST ON BENEFICIAL INSECTS. COMPILATION OF REPORTS BY VARIOUS GOVERNMENT AGENCIES. UNPUBLISHED STUDY.

Record - I267

UNION CARBIDE CORP. 1976. THE EFFECT OF THE MOSQUITO LARVICIDE DIMILIN ON THE BRACKISH WATER ENVIRONMENT OF THREE TEST CANALS IN LOUISIANA. UNPUBLISHED STUDY RECEIVED APR. 7, 1976 UNDER I48-1259. SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - I268

UNION CARBIDE CORP. 1976. THE EFFECT OF THE MOSQUITO LARVICIDE DIMILIN ON THE FRESHWATER ENVIRONMENT OF THREE TEST PONDS IN TEXAS. UNPUBLISHED STUDY RECEIVED

APR. 7, 1976 UNDER 148-1259. SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 1269

UNION CARBIDE CORP. 1976. THE EFFECT OF THE MOSQUITO LARVICIDE DIMILIN ON THE FRESHWATER ENVIRONMENT OF THREE TEST PONDS IN NORTH CAROLINA. UNPUBLISHED STUDY RECEIVED APR. 7, 1976 UNDER 148-1259. SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 1270

UNIROYAL CHEMICAL COMPANY, INC. 1983. DIMILIN 25W INSECT GROWTH REGULATOR. MATERIAL SAFETY DATA SHEET.

Record - 1271

EFFECT OF AN INSECTICIDE CONTROLLED-RELEASE BOLUS ON A MILK ANTIBIOTIC RESIDUE TEST

VAN DER LEEK M L; DONOVAN G A; SALTMAN R L; MOJA R J

J DAIRY SCI 74 (2). 1991. 433-435.

Full Journal Title: Journal of Dairy Science

Language: ENGLISH

ABSTRACT

Following the use of diflubenzuron controlled-release insecticide boluses in a dairy herd, there was concern that post-calving cows were testing positive on a milk antibiotic residue test for more milkings than they had prior to the use of diflubenzuron. A field trial was conducted to examine for possible effects of diflubenzuron milk residues on the milk antibiotic residue test, Delvotest-P. Data of 24 cows in the treatment group and 29 cows in the control group were analyzed. There was no significant difference in the number of milkings after calving in which the milk tested positive on the milk antibiotic residue test between the treatment (2.75 \pm .94) and control (2.97 \pm 1.05) groups when cows in all lactations were analyzed or when analyzed by lactation (1, 2, and \geq 3). It was concluded that the use of diflubenzuron boluses had no effect on the milk antibiotic residue test.

Descriptors/Keywords: DIFLUBENZURON, DELVOTEST-P, INSECTICIDE, FOOD RESIDUE

Record -1272

CHEMICAL CONTROL OF THE CECID HETEROPEZA PYGMAEA IN THE CULTURE OF THE OYSTER MUSHROOM PLEUROTUS OSTREATUS

VAN DE VEIRE M

INTERNATIONAL SYMPOSIUM ON CROP PROTECTION. MEDED FAC LANDBOUWWET RIJKSUNIV GENT 55 (2 PART B). 1990. 681-684.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: BIFENTHRIN, TEFLUTHRIN, CYROMAZINE, DIFLUBENZURON, BUPROFEZIN, FLUFENOXURON, TEFLUBENZURON, DIAZINON, ENDOSULGAN

Record - 1273

CONTROL OF THE MUSHROOM SCIARID SCIARA AURIPILA IN PLEUROTUS OSTREATUS CULTURE WITH THE CHITIN SYNTHESIS INHIBITOR DIFLUBENZURON

VAN DE VEIRE M

MEDED FAC LANDBOUWWET RIJKSUNIV GENT 53 (1). 1988. 97-102.

Full Journal Title: Mededelingen van de Faculteit Landbouwwetenschappen Rijksuniversiteit Gent

Language: ENGLISH

ABSTRACT

The mushroom sciarid, *S. auripila* can be controlled by incorporation of the chitin synthesis inhibitor diflubenzuron in the substrate. A dose of 6.25 ppm applied as a wettable powder is lethal to larvae for at least 9 weeks, leaving only traces of the product in the fruits. Depending upon cultural practices, surface sprays (0.02% a.i.) between croppings can also be very efficient.

Descriptors/Keywords: LARVA MORTALITY

Record - 1274

POSSIBLE MECHANISMS OF THE DIFFERENCE IN SENSITIVITY OF CATERPILLARS OF ADOXOPHYES ORANA AND LASPEYRESIA POMONELLA TO DIFLUBENZURON

VAN ECK W H

ENTOMOL EXP APPL 29 (1). 1981. 60-68.

Full Journal Title: Entomologia Experimentalis et Applicata

Language: ENGLISH

ABSTRACT

The sensitivity to diflubenzuron varies considerably among species of caterpillars that cause damage to fruit [apple]. The cause of this difference in sensitivity was studied in larvae of *A. orana* F. R., a not so sensitive species and *L. pomonella* L., a species that is highly sensitive. The ingestion pattern of diflubenzuron and significance of chitin synthesis to these species are of importance for explaining the difference. It is uncertain whether there is a difference in the affinity of the sites of action of *A. orana* and *L. pomonella* for diflubenzuron.

Descriptors/Keywords: APPLE PESTS, INGESTION PATTERN, CHITIN SYNTHESIS

Record - 1275

MODE OF ACTION OF 2 BENZOYLPHENYL UREAS AS INHIBITORS OF CHITIN SYNTHESIS IN INSECTS

VAN ECK W H

INSECT BIOCHEM 9 (3). 1979. 295-300.

Full Journal Title: Insect Biochemistry

Language: ENGLISH

Subfile: BA (Biological Abstracts)

An in vitro system for measuring the biosynthesis of chitin in house-fly [*Musca domestica*] larvae is described. Isolated larval body walls convert [3H]-labeled glucosamine readily to [3H]-labeled chitin. Diflubenzuron, DU 19111 and polyoxin D inhibit the synthesis of chitin which results in an accumulation of [3H]-labeled uridinediphospho-N-acetylglucosamine in the treated body walls. The increase in UDP-[3H]-GlcNAc corresponds to the decrease in incorporation in chitin. This indicates that the polymerization enzyme, chitin synthetase, is the target for both benzoylphenyl urea insecticides and polyoxin D. Final proof that chitin synthetase in insects is the target for benzoylphenyl ureas can only be given when chitin synthetase can be isolated from insect tissue and studied in vitro.

Descriptors/Keywords: MUSCA-DOMESTICA, TRITIATED, GLUCOSAMINE, DIFLUBENZURON, POLYOXIN D, METABOLIC-DRUG, CHITIN SYNTHETASE, POLYMERIZATION ENZYME

Record - 1276

CARBOXYLAMIDASES IN SPODOPTERA EXIGUA PROPERTIES AND DISTRIBUTION IN THE LARVAL BODY

VAN LAECKE K; DEGHEELE D

PHYTOPARASITICA 21 (1). 1993. 9-21.

Full Journal Title: Phytoparasitica

Language: ENGLISH

ABSTRACT

Resistance to many insecticides demonstrated by the beet armyworm, *Spodoptera exigua* (Hubner), can be caused by the action of carboxylamidases. A colorimetric method, based on the hydrolysis of 4-nitroacetanilide to 4-nitroaniline by carboxylamidases, was used for evaluating biochemical properties of these detoxifying enzymes in beet armyworm. The optimum pH and temperature were 7.5 and 38.degree.C, respectively. Km (Michaelis constant) and Vmax (maximal velocity) at 28.degree.C were 2.3×10^{-4} M and 2.06 nmol min⁻¹ mg protein⁻¹, respectively. The enzyme activity was evaluated in several body parts and located mostly (66.2%) in the midgut. The soluble fraction (supernatant of 105,000g) contained the highest enzyme activity relative to the total (69.3%), and exhibited the highest specific activity. Carboxylamidase activity was totally inhibited in vitro at a concentration of 10^{-6} M methomyl. The analysis of the in vitro inhibition kinetics indicated the ability of methomyl and diflubenzuron to inhibit carboxylamidases noncompetitively. Over 95% inhibition in vivo was obtained when the larvae were fed with castor bean leaves dipped in 250 mg l⁻¹ of methomyl. The in vivo enzyme activity could be reduced to half with a pretreatment of 15 mg l⁻¹ diflubenzuron.

Descriptors/Keywords: CASTOR BEAN LEAF, INSECTICIDE RESISTANCE, METHOMYL, DIFLUBENZURON, DETOXIFICATION

Record - 1277

EFFECT OF INSECTICIDE-SYNERGIST COMBINATIONS ON THE SURVIVAL OF *SPODOPTERA EXIGUA*

VAN LAECKE K; DEGHEELE D

PESTIC SCI 37 (3). 1993. 283-288.

Full Journal Title: Pesticide Science

Language: ENGLISH

ABSTRACT

The chitin synthesis inhibitors diflubenzuron and teflubenzuron have recently become ineffective for the control of *Spodoptera exigua* in floricultural crops. An extended laboratory test with second-instar larvae of *S. exigua* on *Vicia faba* plants was carried out to determine the influence of synergists on the biological activity of three benzoylphenyl ureas (BPU's). The co-application of piperonyl butoxide, an oxidase inhibitor, did not increase the activity of diflubenzuron, teflubenzuron or hexaflumuron. The best results were obtained with diethyl maleate, for suppressing glutathione S-transferase activity, and with dimethoate, as a hydrolase inhibitor. A joint application of diflubenzuron (at a concentration which resulted in 43% survival) with diethyl maleate or dimethoate gave only 6.2 and 8.9% surviving larvae, respectively. In addition, development to fourth-instar larvae was inhibited. The more stable teflubenzuron was synergized by both compounds to a much lesser extent than diflubenzuron. None of the synergists had a significant effect on the activity of hexaflumuron, which was the most potent insecticide of the three BPU's tested against *S. exigua*.

Descriptors/Keywords: VICIA-FABA, INSECT, PLANT, FLORICULTURE, CROP INDUSTRY, AGRICHEMICAL PESTICIDE, TEFLUBENZURON, DIFLUBENZURON, HEXAFLUMURON, DIETHYL MALEATE, DIMETHOATE PIPERONYL BUTOXIDE

Record - 1278

DETOXIFICATION OF DIFLUBENZURON AND TEFLUBENZURON IN THE LARVAE OF THE BEET ARMYWORM *SPODOPTERA EXIGUA* LEPIDOPTERA NOCTUIDAE

VAN LAECKE K; DEGHEELE D

PESTIC BIOCHEM PHYSIOL 40 (2). 1991. 181-190.

Full Journal Title: Pesticide Biochemistry and Physiology

Language: ENGLISH

ABSTRACT

The predominant pathway for diflubenzuron and teflubenzuron detoxification in fifth instar larvae of *Spodoptera exigua* was studied. The insect showed a high tolerance against diflubenzuron and teflubenzuron, and a relatively high susceptibility to chlorfluazuron and hexaflumuron. According to LC50 values, chlorfluazuron (0.093 mg/liter) and hexaflumuron (0.053 mg/liter) were considerably more potent than diflubenzuron (15.79 mg/liter) and teflubenzuron (7.30 mg/liter). Profenofos and diethyl maleate synergized both diflubenzuron and teflubenzuron, indicating that the major route of detoxification in *S. exigua* was through hydrolysis and conjugation. Limited synergism by piperonyl butoxide indicated that mixed function oxidase enzymes play a minor role in benzoylphenylurea (BPU) detoxification. A metabolic study in function of time was carried out. A large part of the less potent benzoylphenylureas was rapidly excreted. An excretion of 67% of diflubenzuron and teflubenzuron was detected 12 hr after intake. The remaining part of diflubenzuron was mostly hydrolyzed to 4-chlorophenylurea and 4-chloroaniline (62% of the metabolites) confirming the conclusions of the synergism study. In addition to hydrolysis, conjugation plays an important role in the detoxification of teflubenzuron (45% of the metabolism). The *in vivo* metabolism of diflubenzuron and teflubenzuron could be reduced by 50 and 30%, respectively, using sublethal concentration of profenofos and by 35 and 40%, respectively, using diethyl maleate.

Descriptors/Keywords: CHLORFLUAZURON, HEXAFLUMURON, PROFENOFOS, DIETHYL MALEATE, PIPERONYL BUTOXIDE, FLORICULTURAL, CROP PEST, INSECTICIDE TOLERANCE, FIFTH INSTAR LARVA, METABOLISM, HYDROLYSIS

Record - 1279

SYNERGISM OF DIFLUBENZURON AND TEFLUBENZURON IN LARVAE OF BEET ARMYWORM LEPIDOPTERA NOCTUIDAE

VAN LAECKE K; DEGHEELE D

J ECON ENTOMOL 84 (3). 1991. 785-789.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Spodoptera exigua (Hubner), a serious lepidopterous pest in greenhouse crops in the Netherlands, is rather insensitive to the chitin synthesis inhibitor diflubenzuron. The LC50 for fourth and fifth instars treated with diflubenzuron were 295 and 16 mg/liter, respectively; for teflubenzuron, LC50's were 42 and 7 mg/liter, respectively. To optimize the use of benzoylphenyl urea in *S. exigua* larvae, a combination with four synergists was studied. The best results were obtained with profenofos and S,S,S-tributylphosphorotrithioate (DEF), both of which are hydrolase inhibitors. These synergists enhanced the toxicity of diflubenzuron in fourth instars nine and six fold, respectively. Diethylmaleate, a glutathion S-transferase inhibitor, decreased the LC50 five fold, whereas piperonyl butoxide, an oxidase inhibitor, was responsible for only a three-fold reduction.

Descriptors/Keywords: SPODOPTERA-EXIGUA, INSECT, CROP INDUSTRY, INSECTICIDE, PEST CONTROL, BENZOYLPHENYL UREAS, NETHERLANDS

Record - 1280

HIGH PERFORMANCE LIQUID CHROMATOGRAPHIC ANALYSIS OF DIFLUBENZURON AND ITS FORMULATIONS COLLABORATIVE STUDY

VAN ROSSUM B; MARTIJN A; DE REIJKE A A; ZEEMAN J

J ASSOC OFF ANAL CHEM 66 (2). 1983. 312-316.

Full Journal Title: Journal of the Association of Official Analytical Chemists

Language: ENGLISH

ABSTRACT

Diflubenzuron [an insecticide] 90% pre-concentrate and its 25% water-dispersible powder were analyzed by a high performance liquid chromatographic method. Six samples were extracted with 1,4-dioxane and linuron [an herbicide] was added as internal standard; diflubenzuron was separated on a 25 cm .times. 4.6 mm column packed with Zorbax BP-C8 with acetonitrile-water-1,4-dioxane (450 + 450 + 100) at 1.3 ml/min, and monitored at 254 nm. Results were obtained from 17 laboratories. Within-laboratory repeatability was 0.6% for both the pre-concentrate and the water-dispersible powder samples, and the reproducibility was 1.2%. The method has been adopted as a full CIPAC [Collaborative International Pesticide Analytical Committee] method and was adopted official 1st action by the AOAC [Association of Official Agricultural Chemists].

Descriptors/Keywords: INSECTICIDE, 1 4 DIOXANE, LINURON, HERBICIDE, ACETONITRILE

Record - 1281

VAN SAMBEEK, J. W. 1982. REDUCED BROOD PRODUCTION OF SOUTHERN PINE BEETLES (*DENDROCTONUS FRONTALIS*), BY DIFLUBENZURON (INSECT GROWTH REGULATOR). USFA RESEARCH NOTE SO US, SOUTHERN FOREST EXP. STATION.

Record - 1282

VASIC, M. 1977. GYPSY MOTH CONTROL (*LYMANTRIA DISPAR*) AND FALL WEBWORM (*HYPHANTRIA CUNEA*) BY DIMILIN (OAKS). ZAST BILJA 28(2): 191-197.

Record - 1283

CONTROL OF SCIARID FLY IN FRENCH MUSHROOMS CULTURES NEW STRATEGIES *VEDIE R*

CENTRE TECHNIQUE DU CHAMPIGNON, SAINT PATERNE, FR. MAHER, M. J. (ED.). MUSHROOM SCIENCE, VOL. XIII. SCIENCE AND CULTIVATION OF EDIBLE FUNGI, VOLS. 1 AND 2; 13TH INTERNATIONAL CONGRESS, DUBLIN, IRELAND, SEPTEMBER 1-6, 1991. XX+442P.(VOL. 1); IX+403P.(VOL. 2) A. A. BALKEMA: ROTTERDAM, NETHERLANDS; BROOKFIELD, VERMONT, USA. ILLUS. MAPS. ISBN 90-5410-022-2(VOL. 1); ISBN 90-5410-023-0(VOL. 2); ISBN 90-5410-021-4(SET). 0 (0). 1991. 465-470.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: METHOPRENE, CYROMAZINE, DIFLUBENZURON, FLUFENOXURON, EFLUBENZURON, INSECTICIDES, GROWTH REGULATORS

Record - 1284

THE EFFECT OF DIFLUBENZURON ON EGG FORMATION BY THE ROOT-KNOT NEMATODE *VEECH J A*

J NEMATOL 10 (2). 1978 208-209.

Full Journal Title: Journal of Nematology

Language: ENGLISH

ABSTRACT

Infusion of cotton seeds with diflubenzuron [dimilin], reduced the numbers of *Meloidogyne incognita* eggs and egg masses. The treatment did not persist and by day 28, effects did not differ from the controls.

Descriptors/Keywords: MELOIDOGYNE-INCOGNITA, INSECTICIDE

Record - 1285

THE EFFECT OF DIFLUBENZURON ON THE REPRODUCTION OF FREE LIVING NEMATODES
VEECH J A

NEMATOLOGICA 24 (3). 1978 312-320.

Full Journal Title: Nematologica

Language: ENGLISH

ABSTRACT

Three species of free-living nematodes; *Pelodera* sp., *Acrobeloides* sp. and *Panagrellus redivivus*, were tested for their ability to reproduce in the presence of various concentrations of diflubenzuron [insecticide]. The nematodes were cultured on an oatmeal medium fortified with 0.01 to 10,000 ppm diflubenzuron. After 10 days the numbers of larvae in test treatments were compared to the control. On medium containing 10 ppm diflubenzuron the populations, expressed as a percent of the control, were 5, 47 and 94 for *Pelodera*, *P. redivivus* and *Acrobeloides*, respectively; on media containing 100 ppm the population of *Acrobeloides* was only 3% of the control. Since diflubenzuron was not toxic to larvae and because it is a specific inhibitor of chitin synthetase, diflubenzuron probably inhibited chitin synthesis in the eggshells effectively inhibiting reproduction.

Descriptors/Keywords: PELODERA-SP, ACROBELOIDES-SP, PANAGRELLUS-REDIVIVUS, OATMEAL, TOXICITY, LARVA, CHITIN SYNTHETASE INHIBITOR

Record - 1286

VEIRE, M. VAN DE, M. VANHAECKE, H. FONTIER, AND D. DEGHELLE. 1982. MOBILITY AND DISTRIBUTION OF THE CHITIN SYNTHESIS INHIBITOR DIFLUBENZURON IN GALLERIA MELLONELLA L. AND SPODOPTERA LITTORALIS BOISD., LAST INSTAR LARVAE. PARASITICA 38(2): 65-74.

Record - 1287

VEIRE, M. VAN DE, AND D. DEGHEELE. 1980. FATE OF THE CHITIN SYNTHESIS INHIBITOR DIFLUBENZURON IN LARVAE OF SPODOPTERA LITTORALIS BOISD. PIERIS BRASSICAE L. AND GALLERIA MELLONELLA L. AFTER ORAL ADMINISTRATION. MEDEDELINGEN VAN DE FACULTEIT LANDBOUWWETENSCHNAPPEN RIJKSUNIVERSITEIT. 45(3): 445-451.

Record - 1288

VEIRE, M. VAN DE, AND E. DELCOUR. 1976. EFFECT OF DIFLUBENZURON ON THE OFFSPRING AFTER TREATMENT OF THE ADULT CABBAGE ROOT FLY HYLENYA BRASSICAE. MEDED RIJKSFAC LANDBOUWWET 28(1): 965-974.

Record - 1289

VELCHEVA, N. 1983. INSECTICIDE ACTION OF DIFLUBENZURON ON THE CATERPILLARS OF MAMESTRA BRASSICAE. PLANT PROT. 31(10): 35-37.

Record - 1290

VERLOOP, A. AND C. D. FERRELL. 1977. BENZOYLPHENYL UREAS-- A NEW GROUP OF LARVICIDES INTERFERING WITH CHITIN SYNTHESIS. IN: H. PLIMMER (ED.) PESTICIDE CHEMISTRY IN THE 20TH CENTURY. ACS SYMP. SER. NO. 37, AMERICAN CHEM. SOC., WASH., DC. PP 237-270.

Record - 1291

FIELD COMPETITIVENESS OF BOLL WEEVILS ANTHONOMUS GRANDIS COLEOPTERA

CURCULIONIDAE STERILIZED BY THE FEEDING OF CHEMOSTERILANTS FOLLOWED BY IRRADIATION OR FUMIGATION

VILLAVASO E J; THOMPSON M J

J ECON ENTOMOL 77 (3). 1984. 583-587.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

The competitiveness of *A. grandis* Boheman, sterilized by 3 methods was measured in isolated 0.2 ha plots of cotton in 1981. Weevils sterilized by feeding on a diet containing 0.1% of an ecdysteroid, 3.beta.,5.beta.,14.alpha.-trihydroxy-5.beta.-cholest-7-en-6-one, followed by either irradiation (10 krad in N₂) or fumigation (100 min at 30.degree. C in bisazir) were significantly more competitive than those sterilized by feeding on a diet containing 100 ppm diflubenzuron and irradiated (10 krad in N₂). Laboratory quality control tests conducted in conjunction with the field tests indicated that the ecdysteroid-fed, irradiated males had a higher mating capability, lived longer, and were just as sterile as the diflubenzuron-fed irradiated males. All 3 treatments caused complete or near complete sterility in females.

Descriptors/Keywords: COTTON, STERILE INSECT TECHNIQUE, DIFLUBENZURON, ECDYSTEROID, BISAZIR

Record - 1292

SYNTHETIC ECDYSTEROIDS PLUS ACUTE IRRADIATION METHOD FOR STERILIZING THE BOLL WEEVIL ANTHONOMUS GRANDIS COLEOPTERA CURCULIONIDAE

VILLAVASO E J; THOMPSON M J

J ECON ENTOMOL 76 (1). 1983. 63-68.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Four synthetic ecdysteroids and diflubenzuron were assessed in combination with .gamma.-irradiation for inhibitory effects on reproduction in *A. grandis* Boheman. Two of the compounds, 3.beta., 5.beta., 14.alpha.-trihydroxy-5.beta.-cholest-7-en-6-one (III) and 2.beta.,3.beta.,14.alpha.-trihydroxy-5.beta.-cholest-7-en-6-one 2-acetate (II), were equally active and were the most inhibitive of the ecdysteroids tested. Treated males crossed with untreated females were 99.5% sterile. Egg production by treated females was reduced to < 0.1 egg/female, and few of these developed into adults. The mating ability of ecdysteroid-.gamma. irradiation treated males was more than twice that of males treated with diflubenzuron-.gamma. irradiation. Unlike diflubenzuron, neither ecdysteroid seemed to increase the detrimental effects caused by irradiation. The feeding of weevils with diet containing ecdysteroid III followed by irradiation affords an effective method for sterilizing the boll weevil for field release.

Descriptors/Keywords: DIFLUBENZURON, 3-BETA 5-BETA 14-ALPHA TRI HYDROXY-5-BETA CHOLEST-7-EN-6-ONE III 2-BETA 3-BETA 14-ALPHA TRI HYDROXY-5-BETA CHOLEST-EN-6-ONE 2 ACETATE II, EGG PRODUCTION

Record - 1293

PHEROMONE PRODUCTION IN BOLL WEEVILS ANTHONOMUS GRANDIS GRANDIS COLEOPTERA CURCULIONIDAE STERILIZED BY 3 METHODS

VILLAVASO E J; WIYGUL G; THOMPSON M J

J ECON ENTOMOL 76 (5). 1983. 1038-1040.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Pheromone production by male boll weevils sterilized by feeding them an ecdysteroid (3.beta.,5.beta.,14.alpha.-trihydroxy-5.beta.-cholest-7-en-6-one) or diflubenzuron before irradiation (10 krad in N₂), and by males fed the ecdysteroid before fumigation with bisazir [P,P-bis(1-aziridiny1)-N-methylphosphinothioic amide], was compared with that of untreated males. Pheromone production was significantly reduced in all 3 treatments, and each treatment exhibited a unique pattern of production. Mortality was significantly higher in the diflubenzuron-fed group than in the other groups. Combined data for pheromone production and mortality showed that the diflubenzuron-fed, irradiated group produced less pheromone than did the other groups.

Descriptors/Keywords: DIFLUBENZURON, ECDYSTEROID, BISAZIR, IRRADIATION, CHEMO
STERILANT

Record - 1294

BOLL WEEVIL ANTHONOMUS GRANDIS COLEOPTERA CURCULIONIDAE FIELD
COMPETITIVENESS OF DIFLUBENZURON FED IRRADIATED MALES 1980 1981

VILLAVASO E J

J ECON ENTOMOL 75 (4). 1982. 662-664.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

In 1980 and 1981, adults of *A. grandis* Boheman were sexually sterilized by exposing them to 10 krad from a ¹³⁷Cs source in an atmosphere of N after they had fed for 5 days on a diet containing diflubenzuron at 100 ppm. Laboratory tests indicated that mating ability of treated males was significantly lower than that of untreated males at both 3 and 7 days after treatment. The LT₅₀ [median lethal time] for treated males was 7.5 days. Both treated males and treated females were 100% sterile by laboratory evaluation. Treated females averaged 2.4 eggs each. The competitiveness of the sterile males in the field was 7.5% that of untreated males over a 7-day period. Competitiveness for days 0-4 averaged 24%, and that for days 0-5 averaged 14%. Introduction of virgin females into the test plots on day 4 or 5 after the sterile weevils and normal males were in the plots showed that the sterile males were virtually noncompetitive (apprx. 1.5%) during days 4-7 after release. If the treatment is to be used in an eradication program, it is suggested that sterile weevils be released at intervals no greater than 4 days.

Descriptors/Keywords: STERILITY, CESIUM-137, ERADICATION PROGRAM

Record - 1295

BOLL WEEVILS ANTHONOMUS GRANDIS GRANDIS COMPETITIVENESS OF STERILE MALES IN
ISOLATED FIELD PLOTS

VILLAVASO E J; LLOYD E P; LUE P S; WRIGHT J E

J ECON ENTOMOL 73 (2). 1980. 213-217.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

In Louisiana and in North Carolina [USA], isolated 0.2 ha cotton plots were used to evaluate the competitiveness of male *A. grandis grandis* Boheman sterilized by 1 of 3 treatment methods: fumigation for 90 min with bisazir (P,P-bis(1-aziridiny1)-N-methylphosphinothioic amide) at atmospheric pressure, followed 30 min later by a 5 s dip in a 1.35% solution of penfluron (2,6-difluoro-N-((4-(trifluoromethyl)phenyl)amino)carbonyl)benzamide) in acetone; 10,000 rad of gamma irradiation from a ¹³⁷Cs source while the weevils were anesthetized in N₂, followed by a 5 s dip in a 0.1% solution of diflubenzuron (N-(((4-chlorophenyl)amino)carbonyl)-2,6-difluorobenzamide) in acetone; and a total dose of 6750 rad administered in 25 fractions of 270 rad each in the pupal and early adult stages. Egg hatch in the plots into which the treated males and untreated males were released in a 120:40 ratio along with the 300 untreated virgin females was significantly lower than in plots into which only untreated weevils

were released (< 73 vs. 98%). Overall competitiveness of sterile males to untreated males was 23.0% for the fumigation treatment, 16.9% for the acute irradiation treatment and 12.0% for the pupal fractionation treatment. There was no significant difference in competitiveness between the acute irradiation and fumigation treatment. Because of the safety and simplicity of the acute irradiation plus diflubenzuron treatment, it is proposed for sterilizing boll weevils for the North Carolina-Virginia [USA] boll weevil eradication trial program.

Descriptors/Keywords: COTTON, P P BIS-1 AZIRIDINYL-N-METHYL PHOSPHINOTHIOIC AMIDE BISAZIR 2 6 DI FLUORO-N-4-TRIFLUOROMETHYLPHENYLAMINOCARBONYL BENZAMIDE PENFLURON N-4 CHLOROPHENYLAMINOCARBONYL-2 6-DIFLUORO BENZAMIDE, DIFLUBENZURON, VIRGINIA, LOUISIANA, NORTH-CAROLINA, USA

Record - 1296

FIELD COMPETITIVENESS OF STERILE MALE BOLL WEEVILS

VILLAVASO E J; NILAKHE S S; MCGOVERN W L

J GA ENTOMOL SOC 14 (2). 1979. 113-120.

Full Journal Title: Journal of the Georgia Entomological Society

Language: ENGLISH

ABSTRACT

Male boll weevils, *Anthonomus grandis* Boheman, were treated with either an acute dose of gamma irradiation (7.0 krad) plus a dip in a 0.02% acetone solution of diflubenzuron (N-[(4-chlorophenyl)mino] carbonyl]-2,6-difluorobenzamide) as 3-4 day old adults or a total dose of 6.5 krad administered in 25 fractions in the pupal stage. When the treated males were field-released with equal numbers of untreated males and 300 virgin females, egg hatch averaged 69.3% in the acute-irradiated group, 76.7% in the pupal-irradiated group and 94.1% in the untreated control. On the basis of competitiveness formulas, the acute-irradiated males were 0.36 as competitive and the pupal-irradiated males were 0.23 as competitive as the untreated males. The mating behavior of the treated weevils was also observed in replicated field plots. Males of an additional treatment fumigation with bisazir (P,P-bis (1-aziridinyl)-N-methylphosphinothioicamide) plus dip in penfluron [2,6-difluoro-N-(((4-(trifluoromethyl) phenyl) amino) carbonyl) benzamide] included in this study performed as well as the acute-irradiated males and better than the pupal-irradiated males.

Descriptors/Keywords: ANTHONOMUS-GRANDIS, GAMMA IRRADIATION, DIFLUBENZURON, EGG HATCH, MATING BEHAVIOR, FUMIGATION, PENFLURON, INSECTICIDE, BISAZIR, P P BIS-1 AZIRIDINYL-N-METHYL PHOSPHINOTHIOIC AMIDE 2 6 DI FLUORO-N-4-TRIFLUOROMETHYLPHENYLAMINOCARBONYL BENZAMIDE

Record - 1297

BOLL WEEVILS FIELD AND LABORATORY ASSESSMENT OF MATING ABILITY AND SPERM CONTENT AFTER IRRADIATION WITH OR WITHOUT DIFLUBENZURON TREATMENT

VILLAVASO E J; EARLE N W; HOLLIER D D

J ECON ENTOMOL 70 (5). 1977. 562-564.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Sperm depletion did not occur within the 1st wk after irradiated males and females of *Anthonomus grandis* Boheman were released together into isolated field plots. Survival and mating ability did not differ as a result of treatment. The treatments were irradiation of 4 day old adults plus diflubenzuron (N-(4-chlorophenyl)-N1-(2,6-difluorobenzoyl) urea), fractionated irradiation of pupae and fractionated irradiation of adults plus diflubenzuron.

Descriptors/Keywords: ANTHONOMUS-GRANDIS, INTEGRATED CONTROL, PUPA

Record - 1298

EFFECTS OF DIFLUBENZURON ON THE STABILIZATION OF PROTEIN WITHIN THE CUTICULAR MATRIX OF THE LOCUST LOCUSTA MIGRATORIA-MIGRATORIOIDES ENSIFERA LOCUSTIDAE

VINCENT J F V; CLARKE L

ENTOMOL GEN 11 (1-2). 1985 . 015-024.

Full Journal Title: Entomologia Generalis

Language: ENGLISH

ABSTRACT

In the cuticula of adult *Locusta migratoria migratorioides* (Reiche & Fairmaire 1895) there are strong correlations between the amounts of chitin and protein. Pharate cuticula holds more protein per unit weight of chitin than does cuticula of the mature adult. Reduction in the chitin content with Diflubenzuron results in a reduction of the amount of protein stabilised within the cuticula. In general the heavily sclerotised regions are less affected: arthrodial membrane will not grow in the absence of chitin. It seems, from measurements on ketocatechol content, that it is not the degree of sclerotisation which is important in stabilising the protein but some inherent property of the protein, possibly its hydrophobicity. These findings support the view that cuticula is formed upon a scaffold of chitin which is saturated with the matrix proteins.

Descriptors/Keywords: INSECTICIDE, CHITIN, SCLEROTIZATION

Record - 1299

INVESTIGATIONS ON SIDE EFFECTS OF INSECTICIDES AND ACARICIDES ON CHRYSOPERLA CARNEA STEPH. NEUROPTERA CHRYSOPIDAE

VOGT H

INTERNATIONAL SYMPOSIUM ON CROP PROTECTION, GENT, BELGIUM, MAY 5, 1992.

MEDED FAC LANDBOUWWET RIJKSUNIV GENT 57 (2-3 PART A-B). 1992. 559-567.

Language: GERMAN

Document Type: CONFERENCE PAPER

Descriptors/Keywords: ORDOVAL, CASCADE, INSEGAR, NANOCRON, FENOXYCARB, NOMOLT, ANDALIN, DIMILIN, INSECT GROWTH REGULATOR, TOXICITY, INSECT FERTILITY, REDUCTION

Record - 1300

NONFUMIGANT NEMATOCIDES FOR CONTROL OF ROOT-KNOT NEMATODE TO PROTECT CARROT ROOT GROWTH IN ORGANIC SOILS

VRAIN T C; BELAIR G; MARTEL P

J NEMATOL 11 (4). 1979. 328-333.

Full Journal Title: Journal of Nematology

Language: ENGLISH

ABSTRACT

Greenhouse tests were conducted to determine the effects of 2 kinds of *Meloidogyne hapla* inoculum on the growth and quality of carrot roots, and the protection afforded in each case by nonfumigant nematocides in organic soils. For all treatments the percentage of carrots damaged was greater with larvae alone as inoculum than with larvae and eggs, indicating that most of the damage occurs early during formation of the taproot. Fosthietan, aldicarb and oxamyl at 4 and 6 kg ai[active ingredient]/ha protected the roots during formation and gave a lasting control of root-knot nematode. There was some nematode damage to the roots with phenamiphos and carbofuran at 4 and 6 kg ai/ha. Isazophos, diflubenzuron and fenvalerate gave little protection to carrot roots and did not

control root-knot nematode effectively.

Descriptors/Keywords: MELOIDOGYNE-HAPLA, FOSTHIETAN, ALDICARB, OXAMYL, CARBOFURAN, PHENAMIPHOS, ISAZOPHOS, FENVALERATE, DIFLUBENZURON, LARVAE, EGGS

Record - 1301

AGE-SPECIFIC REDUCTION IN GERMAN COCKROACH BLATTOIDEA BLATTELLIDAE
POPULATIONS EXPOSED TO DIFLUBENZURON

WADLEIGH R W; KOEHLER P G; PATTERSON R S

J ENTOMOL SCI 26 (2). 1991. 244-252.

Full Journal Title: Journal of Entomological Science

Language: ENGLISH

ABSTRACT

The chitin synthesis inhibitor, diflubenzuron, caused age-specific reductions among populations of the German cockroach, *Blattella germanica* (L.), in test arenas (122 by 122 by 30.5 cm). Diflubenzuron at 30, 60, and 120 mg A.I./m² killed nymphs with the molting first instar the most susceptible stage, and male and female adults that were exposed as nymphs. At the higher application rates (60 and 120 g/m²), selective mortality during the first ecdysis resulted in lower numbers of older nymphs as the original population of cockroaches placed in the arenas matured. The decline in the number of older nymphs caused a shift in population age structure to one consisting almost entirely of first instar nymphs and adults. After 12 wk of exposure, total cockroach numbers were reduced by 67.3%, 93.0%, and 98.2% with residues of 30, 60, and 120 mg/m², respectively. Diflubenzuron residues did not reduce egg hatch.

Descriptors/Keywords: BLATTELLA-GERMANICA, NYMPH, ADULT, CHITIN SYNTHESIS INHIBITOR, EGG HATCH, SURVIVORSHIP, INSECTICIDE, DIFLUBENZURON, BIOLOGICAL CONTROL

Record - 1302

CONTROL OF OAK DEFOLIATOR GAZALINA CHRYSOLOPHA KOLLAR

WALI-UR-RAHMAN M I C

PAK J FOR 41 (2). 1991. 89-93.

Full Journal Title: Pakistan Journal of Forestry

Language: ENGLISH

ABSTRACT

In laboratory trials against oak defoliator, *Gazalina chrysolopha* Koll. three antimoultant chemicals-Atabron, Alsystin and Dimilin in 0.04% concentration gave, respectively, 95, 90 and 85% larval mortality within 6 days while the insecticides Malathion and Sevin SP killed 100% and Orthene 80% larvae in the same dose within 24 hours. In lower doses of 0.01 and 0.02% antimoultants caused 60 to 75% and insecticides 70 to 80% larval mortality in the same periods. The pest was controlled by spraying Malathion 57% E.C. in 0.17% concentration on the resting caterpillars at the base of trees without harming the natural enemies of the pest.

Descriptors/Keywords: QUERCUS-DILATATA, FORESTRY, PEST CONTROL, INSECTICIDE, ANTIMOLTANT, CHEMICAL, ATABRON, ALSYSTIN, DIMILIN, LARVA MORTALITY

Record - 1303

EFFICACY OF ALSYSTIN DIMILIN AND BACTOSPEINE AGAINST BABUL DEFOLIATOR
EUPROCTIS LUNATA WALK

WALI-UR-RAHMAN; CHAUDHRY M I

PAK J ZOOL 19 (4). 1987. 307-312.

Full Journal Title: Pakistan Journal of Zoology

Language: ENGLISH

Subfile: BA (Biological Abstracts)

Alsystin and Dimilin, two antimoultant chemicals, and Bactospeine, a bacterial insecticide, were tested against babul defoliator, *Euproctis lunata* Walk. (Lymantridae: Lepidoptera) at the Mulchand Forest (Pakistan) in Tando Mohammad Khan Forest Division. Alsystin and Dimilin in 0.01, 0.02 and 0.04% concentration gave 100% mortality of larvae within 20 days, while Bactospeine killed 100%, 90.4% and 80.9% larvae, respectively, in 8 mg, 6 mg, and 4 mg per litre of water within the same period. A natural mortality of 28.5, 38.0 and 23.8% occurred in Alsystin, Dimilin and Bactospeine, respectively.

Descriptors/Keywords: LARVA, INSECT GROWTH REGULATOR, INSECTICIDE, MORTALITY, MULCHAND FOREST, PAKISTAN

Record - 1304

LABORATORY SELECTED RESISTANCE TO DIFLUBENZURON IN LARVAE OF
AEDES AEGYPTI

WALKER A L; WOOD R J

PESTIC SCI 17 (5). 1986. 495-502.

Full Journal Title: Pesticide Science

Language: ENGLISH

ABSTRACT

The variation in tolerance to diflubenzuron [1-(4-chlorophenyl)-3-(2,6-difluorobenzoyl)urea] was examined in fourth instar larvae of seven strains of *Aedes aegypti*, some of which were resistant to DDT and permethrin. The difference between the least and the most tolerant to diflubenzuron was approximately two-fold. There was no correlation with resistance to the other insecticides. A DDT-resistant strain (T8) was selected 10 times (during 12 generations) with diflubenzuron. The LC₅₀ to diflubenzuron had increased 3.3 times by the S8 generation but there was no further increase in later generations despite further selection. Associated with this increase, a marked decrease in resistance to DDT was observed but not change in permethrin tolerance. A genetically enriched strain (Hotchpotch) was synthesised from 35 strains of different geographic origin and crossed to the selected T8 strain before subsequent generations were selected five times with diflubenzuron. This procedure resulted in an 8- to 12-fold increase in the LC₅₀ value over that for unselected T8, accompanied by a decrease in the slope of the log dose against probit mortality line.

Descriptors/Keywords: DDT, PERMETHRIN, INSECTICIDE, CROSS RESISTANCE, INSECT GROWTH REGULATOR

Record - 1305

EFFECTS OF DIFLUBENZURON ON CHITIN SYNTHESIS IN THE POSTMOLT BLUE CRAB
CALLINECTES SAPIDUS A MORPHOLOGIC STUDY USING AN IN-VITRO EXPLANT CULTURE SYSTEM

WALKER A N; HORST M N

J CRUSTACEAN BIOL 12 (3). 1992. 354-360.

Full Journal Title: Journal of Crustacean Biology

Language: ENGLISH

ABSTRACT

Diflubenzuron is an insect larvicide that inhibits chitin synthesis. The effects of diflubenzuron were investigated on a nontarget organism, the postmolt adult blue crab *Callinectes sapidus*. Sections (explants) of the cuticle and epithelium were cut from the dorsal carapace of freshly molted blue crabs and maintained for 6 h in a buffered Ringer's solution containing diflubenzuron and 3H-glucosamine. Control sections were taken from the same animals and were maintained in a like fashion but without

exposure to diflubenzuron. The sections were subsequently fixed, processed and examined by electron microscopy, or probed with a chitin oligosaccharide-binding lectin, or studied for ³H-glucosamine incorporation by autoradiography. Ultrastructurally, diflubenzuron-treated tissues showed coarse clumping of nuclear chromatin, dilation of the rough endoplasmic reticulum, and vesiculation of the apical cytoplasm of the cuticular epithelial cells. Decrease in nascent chitin in the treated tissues was demonstrated at the light microscopic level by scant binding of the lectin and minimal radiolabeling in the endocuticular region. The results offer morphologic evidence that diflubenzuron can interfere with crustacean chitin synthesis.

Descriptors/Keywords: NON-TARGET ORGANISM, COMMERCIALY SIGNIFICANT SPECIES, INSECTICIDE, CUTICLE, EPITHELIUM, CYTOLOGICAL ANALYSIS, ELECTRON MICROSCOPY

Record - 1306

WAN, M. T. K. AND D. M. WILSON. 1977. "IMPACT OF INSECT GROWTH REGULATORS ON SELECTED NON-TARGET ORGANISMS WITH MOSQUITO LARVAE: REPORT NO. EPS 5-PR-77-1. US ENVIRONMENTAL PROTECTION SERVICE, PACIFIC REGION, POLLUTION ABATEMENT BRANCH, UNPUBLISHED STUDY.

Record - 1307

LABORATORY BIOASSAY WHITEWHISKERED GRASSHOPPER AGENEOTETTIX DEORUM SCUDDER BIGHEADED GRASSHOPPER AULOCARA ELLIOTTI THOMAS DAWSON'S SPUR-THROAT GRASSHOPPER MELANOPLUS DAWSONI SCUDDER REDLEGGED GRASSHOPPER MELANOPLUS FEMURRUBRUM DEGEER FLABELLATE GRASSHOPPER MELANOPLUS OCCIDENTALIS THOMAS LESSER MIGRATORY GRASSHOPPER MELANOPLUS SANGUINIPES F. OBSCURE GRASSHOPPER OPEIA OBSCURA THOMAS P-QUAD GRASSHOPPER PHLIBOSTROMA QUADRIMACULATUM THOMAS FEEDING TEST ON TOXICITY OF INSECTICIDAL BAITS TO RANGELAND GRASSHOPPERS 1990

WANG T; BOHLS R A

THOMAS, J. H. (ED.). INSECTICIDE AND ACARICIDE TESTS, VOL. 16. 327P.
ENTOMOLOGICAL SOCIETY OF AMERICA: LANHAM, MARYLAND, USA. ILLUS. PAPER. 0
(0). 1991. 298.

Language: ENGLISH

Descriptors/Keywords: CARBARYL, DIMILIN, MORTALITY

Record -1308

RANGELAND GRASSES CRESTED WHEATGRASS AGROPYRON DESERTORUM FISCH. SCHULT. WESTERN WHEATGRASS AGROPYRON MITHII RYDB. NEEDLE AND THREAD STIPA COMATA TRIN. AND RUPR. BLUE GRAMMA BOUTELOUA GRACILIS H. B. K. LAG. EX STEUD. BIGHEADED GRASSHOPPER AULOCARA ELLIOTTI THOMAS EVALUATION OF DIMILIN 1 PERCENT BRAN BAIT FOR GRASSHOPPER CONTROL ON RANGELAND 1990

WANG T; FULLER B W

THOMAS, J. H. (ED.). INSECTICIDE AND ACARICIDE TESTS, VOL. 16. 327P.
ENTOMOLOGICAL SOCIETY OF AMERICA: LANHAM, MARYLAND, USA. ILLUS. PAPER. 0
(0). 1991. 213.

Language: ENGLISH

Record - 1309

WANG, Y. C. AND T. Y. LI. 1980 AERIAL SPRAYING OF DIMILIN FOR THE CONTROL OF PAROCNERIA FURVA (LEEK) FOREST PESTS IN CHINA). FOREST SCIENCE & TECHNOLOGY. NOV. 1980 (11): 26-28.

Record - 1310

DIFLUBENZURON TOXICITY TO SELECTED CHITINOLYTIC BACTERIAL ISOLATES

WARNES C E; GLOSSENGER D H

89TH ANNUAL MEETING OF THE AMERICAN SOCIETY FOR MICROBIOLOGY, NEW ORLEANS, LOUISIANA, USA, MAY 14-18, 1989. ABSTR ANNU MEET AM SOC MICROBIOL 89 (0). 1989. 297.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: ABSTRACT, PESTICIDE, CHITANASE, COOPERATION, CHITINOUS, PEST ELIMINATION

Record - 1311

EVALUATION OF THE LARVICIDE DIFLUBENZURON FOR THE CONTROL OF A MULTI-INSECTICIDE RESISTANT STRAIN OF HOUSEFLY MUSCA DOMESTICA ON A UK PIG FARM

WEBB D P; WILDEY K B

INT PEST CONTROL 28 (3). 1986. 64-66.

Full Journal Title: International Pest Control

Language: ENGLISH

ABSTRACT

Diflubenzuron was evaluated for the control of a multi-insecticide resistant strain of housefly in a UK pig farm. A commercial formulation of diflubenzuron was applied at either 625 mg/m² active ingredient (a.i.) or 416 mg/m² a.i. to the slurry pits of flat-deck, pig weaning rooms. Both deposit rates gave effective control.

Descriptors/Keywords: INSECT GROWTH REGULATOR

Record - 1312

DEVELOPMENT OF A SPECIALIZED GYPSY MOTH LEPIDOPTERA LYMANTRIIDAE MANAGEMENT PROGRAM FOR SUBURBAN PARKS

WEBB R E; RIDGWAY R L; THORPE K W; TATMAN K M; WIEBER A M; VENABLES L

J ECON ENTOMOL 84 (4). 1991. 1320-1328.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

A specialized gypsy moth, *Lymantria dispar* (L.) management program was designed for use in urban-suburban parks and other wooded public lands. A guide based on number and size of egg masses, host susceptibility, and previous defoliation was developed to assist in making treatment decisions. One or two applications of *Bacillus thuringiensis* Berliner (subspecies *kurstaki*) (40 billion international units per ha) or one application of diflubenzuron (Dimilin) were applied at 28 g (AI)/ha with the goal of preventing > 30% defoliation in any part of a management unit. Land managers selected the control material used. The trial program was implemented in six management units including one county park in 1988, and four parks and the Beltsville Agricultural Research Center (BARC) in 1989. *B. thuringiensis* was applied once to 993 ha of park land and 812 ha at BARC; diflubenzuron was applied once to 176 ha at BARC. *B. thuringiensis* was applied twice to 220 ha of park land and 233 ha at BARC. Average corrected larval mortality based upon counts made before and after treatment were 69.0% and 85.7%, respectively, for one or two applications of *B. thuringiensis* and 93% for one application of diflubenzuron. Although no defoliation > 30% occurred on lands receiving two applications of *B. thuringiensis* or one application of diflubenzuron, such defoliation occurred on 1.0% of the

untreated land and 4.2% of the area treated with one application of *B. thuringiensis*, probably because of sampling error and inadequate spray coverage.

Descriptors/Keywords: LYMANTRIA-DISPAR, BACILLUS-THURINGIENSIS, INSECT, BACTERIA, MICROORGANISM, BIOLOGICAL CONTROL, DIFLUBENZURON, INSECTICIDE, LAND MANAGEMENT, DEFOLIATION, PEST CONTROL, PARKS AND RECREATION

Record - 1313

EFFECT OF AERIAL SPRAYING WITH DIMILIN DIPEL OR GYPCHEK ON TWO NATURAL ENEMIES OF THE GYPSY MOTH LEPIDOPTERA LYMANTRIIDAE

WEBB R E; SHAPIRO M; PODGWAITE J D; REARDON R C; TATMAN K M; VENABLES L;
KOLODNY-HIRSCH D M

J ECON ENTOMOL 82 (6). 1989. 1695-1701.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

The effects of three aerially applied insecticides on the incidence of two components of the natural enemy complex of the gypsy moth, *Lymantria dispar* (L.), were evaluated for the 1987 year of application. Application of Gypchek, a registered formulation of the gypsy moth nuclear polyhedrosis virus (NPV), initiated a large early-season (first-wave) epizootic of NPV; late-season NPV (second-wave) levels were higher in plots treated with Gypchek than in control plots, but not significantly so, whereas levels of the parasitoid *Cotesia melanoscela* (Ratzeburg) were significantly reduced in Gypchek-treated plots compared with control plots. Application of Dipel (*Bacillus thuringiensis* Berliner) resulted in a significant increase in numbers of *C. melanoscela*. Application of either Dipel or Dimilin (diflubenzuron) resulted in a significant decrease in incidence of NPV compared with control plots. Numbers of *C. melanoscela* in plots treated with Dimilin were not significantly different from those detected in control plots.

Descriptors/Keywords: LYMANTRIA-DISPAR, COTESIA-MELANOSCELA, BACILLUS-THURINGIENSIS, NUCLEAR POLYHEDROSIS VIRUS, INSECT, BACTERIA, PARASITOID, BIOLOGICAL CONTROL, INSECTICIDE, DIFLUBENZURON, PEST CONTROL

Record - 1314

WEBB, R. E., K. M. TATMAN, B. A. LEONHARDT, J. R. PLIMMER, K. BOYD, P. G. BYSTRAK, AND C. P. SCHWALBE. 1988. EFFECT OF AERIAL APPLICATION OF RACEMIC DISPARLURE ON MALE TRAP CATCH AND FEMALE MATING SUCCESS OF GYPSY MOTH (LEPIDOPTERA: LYMANTRIIDAE). J. ECON. ENTOMOL. 81(1): 268-273.

Record - 1315

A LABORATORY EVALUATION OF THE EFFECTIVENESS OF DIFLUBENZURON AGAINST *DERMESTES MACULATUS* AND OTHER STORAGE INSECT PESTS

WEBLEY D J; AIREY W A

PESTIC SCI 13 (6). 1982. 595-601.

Full Journal Title: Pesticide Science

Language: ENGLISH

ABSTRACT

The chitin synthesis inhibitor diflubenzuron, applied as a wettable powder spray to woven polypropylene at 100-500 mg m⁻² was effective against *D. maculatus* De Geer for at least 12 wk. *D. maculatus* was unable to develop on ox hide dipped in a suspension of diflubenzuron (125 mg l⁻¹), or on fishmeal dusted at 1-10 mg of active ingredient kg⁻¹. Diflubenzuron prevented the development of infestations of *Callosobruchus maculatus* (L.) on peas and of *Acanthoscelides obtectus* (Say) on beans

dusted at 1-5 mg kg⁻¹. The compound was also effective against early instar larvae of *Trogoderma granarium* Everts on wheat. The persistence and activity of diflubenzuron at low dosage rates against *D. maculatus* justify larger scale trials.

Descriptors/Keywords: CALLOSOBRUCHUS-MACULATUS, ACANTHOSCELIDES-OBTECTUS, TROGODERMA-GRANARIUM, BEAN, PEA, WHEAT, CHITIN SYNTHESIS

Record - 1316

EFFECTS OF THE PESTICIDE DIFLUBENZURON ON LARVAL HORSESHOE CRABS
LIMULUS POLYPHEMUS

WEIS J S; MA A

BULL ENVIRON CONTAM TOXICOL 39 (2). 1987. 224-228.

Full Journal Title: Bulletin of Environmental Contamination and Toxicology

Language: ENGLISH

Descriptors/Keywords: INSECTICIDE

Record - 1317

EFFECTS OF DIFLUBENZURON ON LIMB REGENERATION AND MOLTING IN THE FIDDLER CRAB UCA PUGILATOR

WEIS J S; COHEN R; KWIATKOWSKI J K

AQUAT TOXICOL (AMST) 10 (5-6). 1987. 279-290.

Full Journal Title: Aquatic Toxicology (Amsterdam)

Language: ENGLISH

ABSTRACT

Fiddler crabs, *Uca pugilator*, were exposed to the insect growth regulator diflubenzuron (Dimilin) at 0.5, 5, and 50 .mu.g/l after multiple autotomy of one chela and five walking legs. Regeneration of the first walking leg was monitored, and time to ecdysis, mortality, and morphology of the regenerated limbs observed. Continuous exposure to the chemical produced a dose-dependent retardation of regeneration. Animals molting in the higher concentrations exhibited significant mortality at ecdysis. Exposure to the pesticide for a single week produced similar but less severe effects. However, if crabs molted while in the pesticide, significant mortality was observed. The presence of sediment in the container with the crab moderated the effects of the pesticide, but did not eliminate them. The regenerated limbs of the crabs that survived ecdysis were found to have lesions in the form of black areas in which the cuticle was improperly developed. These lesions were seen in crabs that had been in the pesticide for only one week (week 2 or week 3) as well as those that had had continuous exposure. They were also seen in crabs that regenerated in Dimilin with sediment. In addition, the number of setae on limbs was reduced compared to the number on limbs that had regenerated in clean sea water.

Descriptors/Keywords: INSECT GROWTH REGULATOR, ECDYSIS, INSECTICIDE

Record - 1318

WEISS, M. 1977. EFFECTS OF DIMILIN ON ADULTS AND EGGS OF AGELASTICA ALNI L. (COLEOPTERA, CHRYSOMELIDAE). ANZ SCHADLINGSKD PFLANZENSCHUTZ UMWELTSCHUTZ 50 (11): 161-164.

Record - 1319

WERNZ, J. AND G. P. MARKIN. 1977. FLOW RATES AND CHARACTERISTICS OF DIMILIN, DYLOX. 1.5, ORTHENE 75S AND SEVIN 4-OIL [DOUGLAS-FIR [TUSsock Moth, ORGYIA PSUEDOTSUGATA, FIR

FORESTS, INSECTICIDES, PSEUDOTSUGA MENZIESII] US PACIFIC NORTHWEST FOREST & RANGE
EXP. ST. USDA FOR. SER. RES. NOTE PNW US PAC. NORTHWEST FOR. RANGE. EXP. STA. 300. 16 PP.

Record - 1320

CODLING MOTH CYDIA POMONELLA LEPIDOPTERA TORTRICIDAE CONTROL ON PEARS
WITH MODIFIED PROGRAMS USING INSECT GROWTH REGULATORS

WESTIGARD P H; GUT L J

J ECON ENTOMOL 79 (1). 1986. 247-249.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Three insect growth regulators (IGR's).sbd.diflubenzuron, alsystin, and CME13406 (1[3,5-dichloro-2,4-difluorophenyl]-3-[2,6-difluorobenzoyl]-urea). sbd.were tested against the codling moth, *Cydia pomonella* (L.), on pears in southern Oregon [USA]. Used in a customary three-spray program, the IGR's gave results equal to or better than that achieved with the standard phosmet. Reduction in the number of applications from three to two indicated that the IGR's could be used successfully in a reduced application program. Also, the IGR's did not cause disruptions to the nontarget pests, pear psylla, *Psylla pyricola* Foerster, or the twospotted spider mite, *Tetranychus urticae* Koch, which were apparent following use of phosmet for codling moth suppression.

Descriptors/Keywords: PSYLLA-PYRICOLA, TETRANYCHUS-URTICAE, FRUITS,
DIFLUBENZURON, ALSYSTIN, 1-3 5 DICHLORO-2 4-DIFLUOROPHENYL-3-2 6-
DIFLUOROBENZOYLUREA, OREGON USA

Record - 1321

SELECTIVE CONTROL PROGRAM FOR THE PEAR PEST COMPLEX IN SOUTHERN OREGON
USA

WESTIGARD P H; GUT L J; LISS W J

J ECON ENTOMOL 79 (1). 1986. 250-257.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Selective chemical control programs were evaluated in four southern Oregon pear orchards with the goal of maximizing effect of biological control agents for suppression of pear pests. The programs used prebloom oil sprays for control of San Jose scale, *Quadraspidiotus perniciosus* (Comstock), and for ovipositional delay of pear psylla, *Psylla pyricola* Foerster; diflubenzuron for codling moth, *Cydia pomonella* (L.), suppression; *Bacillus thuringiensis* Berliner for leafrollers; and, where needed, half the usual rate of cyhexatin for spider mite control. Organophosphates, carbamates, pyrethroids, and amitraz were deleted from selective programs. Predator density increased in all selective plots and was sufficiently high in two of the four orchards to give commercially acceptable control of pear psylla and to lower acaricide use by 75%. Control costs were ca. \$300 per ha and \$700 per ha in selective and standard programs, respectively. Density and period of colonization by pests and predators varied from site to site and appeared to depend on previous treatment history within the study area, and on the nature and management of surrounding vegetation.

Descriptors/Keywords: QUADRASPIDIOTUS-PERNICIOSUS, PSYLLA-PYRICOLA,
CYDIA-POMONELLA, BACILLUS-THURINGIENSIS, LEAFROLLER, SPIDER MITE,
INSECTICIDAL OIL, DIFLUBENZURON, INSECT GROWTH REGULATOR, FRUITS, PREDATOR,
ACARICIDE, CYHEXATIN, ECONOMICS, MICROBIAL CONTROL

Record - 1322

CODLING MOTH LASPEYRESIA POMONELLA CONTROL ON PEARS WITH DIFLUBENZURON
AND EFFECTS ON NONTARGET PEST AND BENEFICIAL SPECIES

WESTIGARD P H

J ECON ENTOMOL 72 (4). 1979. 552-554.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Diflubenzuron was evaluated in southern Oregon [USA] pear orchards for control of the codling moth, *L. pomonella* (L.), and for effects on nontarget species. Diflubenzuron was most effective when the 1st summer treatment was timed to coincide with 1st moth flight in late spring. Increased rates of diflubenzuron improved codling moth control but were more disruptive than lower rates to natural enemies of the pear psylla *Psylla pyricola* Foerster. Diflubenzuron used at 0.14 kg AI[active ingredient]/ha caused no reduction in psylla natural enemies compared to densities in untreated checks. Pear psylla levels were 3- to 4-fold higher in standard treatments with azinphosmethyl or phosmet compared to those in diflubenzuron plots. This was attributed to reduction in natural enemies found in the organophosphate control program. No increase in two-spotted spider mite, *Tetranychus urticae* Koch, densities was noted following diflubenzuron treatments compared to the untreated check plot.

Descriptors/Keywords: PSYLLA-PYRICOLA, TETRANYCHUS-URTICAE, INSECT GROWTH
REGULATOR, AZINPHOS-METHYL, PHOSMET, INSECTICIDES, FLIGHT PERIOD, OREGON USA

Record - 1323

WESTIGARD, P. 1977. REPORT FOR 1977. DIMILIN W-25. SUBMITTER NO. 4532. UNPUBLISHED STUDY RECEIVED FEB. 13, 1979 UNDER 148-EX-26. PREPARED BY OREGON STATE UNIV. SOUTHERN OREGON EXPERIMENT STATION. SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 1324

WESTIGARD, P. 1976. SEASONAL PROGRAM EVALUATION OF EXPERIMENTAL COMPOUNDS. SUBMITTER NO. 42117. UNPUBLISHED STUDY RECEIVED FEB. 13, 1979 UNDER 148-EX-26. PREPARED BY OREGON STATE UNIV. SOUTHERN OREGON EXPERIMENT STATION, SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS.

Record - 1325

WHELAN, C. J., R. T. HOLMES, AND H. R. SMITH. 1989. BIRD PREDATION ON GYPSY MOTH (LEPIDOPTERA: LYMANTRIIDAE) LARVAE: AN AVIARY STUDY. ENVIRON. ENTOMOL 18(1): 43-45.

Record - 1326

EFFECTS OF BENDIOCARB AND DIFLUBENZURON ON MUSHROOM CROPPING

WHITE P F

ANN APPL BIOL 108 (1). 1986. 11-20.

Full Journal Title: Annals of Applied Biology

Language: ENGLISH

ABSTRACT

When mixed into the casing or compost layers of a mushroom [*Agaricus bisporus*] bed in the absence of pests, [*Lycoriella auripila*] bendiocarb decreased yield and number of mushroom number at the two highest rates used (100 to 1000 $\mu\text{g/g}$), and there were large increases in mushroom size. Effects of bendiocarb incorporation in the compost diminished with time, and there was partial compensation in yield and numbers at the fourth flush. The action of bendiocarb persisted when it was mixed into the casing. Diflubenzuron showed some opposite effects at lower concentrations. When either mixed into, or

drenched onto the casing at the commercial rate (30 .mu.g/g), yield and size were both increased and the timing of the flushes was unaffected. At the two higher concentrations (180 and 1080 .mu.g/g), reductions in yield and number and an increase in mushroom size were shown. However, these effects became more severe with time, especially those on mushroom number, possibly due to the accumulation of a toxic breakdown product.

Descriptors/Keywords: AGARICUS-BISPORUS, LYCORIELLA-AURIPILA, INSECTICIDE, INSECT GROWTH REGULATOR, PHYTOTOXICITY, PERSISTENCE

Record - 1327

SUBLETHAL EFFECTS OF 4 PESTICIDES ON PEDOGENETIC LARVAE OF THE
CECIDOMYIIDAE

WHITE P F

ENTOMOL EXP APPL 22 (1). 1977 43-52.

Full Journal Title: Entomologia Experimentalis et Applicata

Language: ENGLISH

ABSTRACT

The sublethal effects of 4 pesticides on paedogenetic larvae of the Cecidomyiidae were investigated in sterile culture. In *Heteropeza pygmaea*: diazinon at 0.2 ppm and above in the agar medium produced an all-or-nothing response where most larvae lost locomotory coordination and did not feed, but on transference to an untreated culture many recovered and reproduced; gamma. HCH [formerly gamma. BHC] reduced activity, hemipupal size and fecundity in proportion to dosage; quinomethionate reduced hemipupal size, but the number of young increased from a mean of 12 for untreated parents to 15.5 at 0.32 ppm; diflubenzuron induced 1 larva to produce a previously unrecorded 2nd instar, and the evolutionary significance of this is discussed. The effect of diflubenzuron on larvae of *Mycophila speyeri* was 2-fold: a reduction in fecundity of the parents and an increase in pupa-larva production.

Descriptors/Keywords: HETEROPEZA-PYGMAEA, MYCOPHILA-SPEYERI, 2ND INSTAR, EVOLUTIONARY SIGNIFICANCE, DIAZINON, GAMMA BHC, QUINOMETHIONATE
DIFLUBENZURON

Record - 1328

WHITE, W. B., W. H. MCLANE, AND N. F. SCHEEBERGER. 1981. PESTICIDES (LYMANTRIA DISPAR), DDT, CARBARYL, DIFLUBENZURON, PYRETHRINS, BACILLUS THURINGIENSIS, ACEPHATE). TECHNICAL BULLETIN, USDA 1981. (1584) PP. 423-442.

Record - 1329

WHITE, W. B. 1975. EVALUATION OF DIMILIN AGAINST THE GYPSY MOTH AND EFFECTS ON NON-TARGET ORGANISMS. 1975. REPORT EXPANDED GYPSY MOTH RESEARCH AND APPL. PROGRAM. HAMDEN, USA NTP-18.

Record - 1330

COMPARISON OF COATING AND IMMUNIZING ANTIGEN STRUCTURE ON THE SENSITIVITY
AND SPECIFICITY OF IMMUNOASSAYS FOR BENZOYLPHENYLUREA INSECTICIDES

WIE S I; HAMMOCK B D

J AGRIC FOOD CHEM 32 (6). 1984. 1294-1301.

Full Journal Title: Journal of Agricultural and Food Chemistry

Language: ENGLISH

ABSTRACT

Several sensitive enzyme-linked immunosorbent assays (ELISA) were developed for the

benzoylphenylurea insect growth regulators diflubenzuron, BAY SIR 8514 and penfluron. The sensitivities and specificities of the assays have been investigated by using several different benzoylphenylurea derivatives as the immunogens as well as coating antigens. The following approach was used to solve the problem of bridge recognition: homologous site systems to use the same coupling site on the benzoylphenylurea molecule in the immunogen and coating antigen, but to vary the bridge structure and heterologous site systems, coupling the immunogen and coating antigen from different positions on the benzoylphenylurea molecule. The heterologous systems yielded more sensitive assays, but antisera obtained from all the immunogens were used successfully in developing ELISA for benzoylphenylureas. With these sensitive ELISA, diflubenzuron was detected in milk at a level of 2 ppb without any sample extraction procedure, and sample cleanup led to still more sensitive assays. The reproducibility and sensitivity of the method are adequate for practical residue analysis. This work illustrates that a limited collection of antisera and coating antigens can yield a powerful library of assays capable of specifically detecting single compounds or a variety of members of a compound class.

Descriptors/Keywords: DIFLUBENZURON, PENFLURON, BAY SIR-8514, MILK RESIDUES, ELISA, ENZYME-LINKED IMMUNOSORBENT ASSAY

Record - 1331

DEVELOPMENT OF ENZYME LINKED IMMUNO SORBENT ASSAYS ELISA FOR RESIDUE ANALYSIS OF DIFLUBENZURON AND BAY-SIR-8514 N-4 TRI FLUOROMETHOXYPHENYLAMINOCARBONYL-2-CHLORO BENZAMIDE

WIE S I; HAMMOCK B D

J AGRIC FOOD CHEM 30 (5). 1982. 949-963.

Full Journal Title: Journal of Agricultural and Food Chemistry

Language: ENGLISH

ABSTRACT

Three ELISA were developed for the benzoylphenylurea insect growth regulators (IGR) diflubenzuron, BAY-SIR 8514, and some of their analogs. All 3 ELISA were based on antibodies raised against an N-carboxypropyl hapten of diflubenzuron, while a diflubenzuron phenylacetic acid derivative coupled to a different carrier than the immunizing antigen was used as the coating antigen. One ELISA was sensitive for diflubenzuron, BAY SIR 8514, and closely related IGR while a 2nd assay was sensitive for diflubenzuron when demonstrating minimal cross-reactivity with BAY-SIR 8514. In a 3rd case, rabbit anti-diflubenzuron IgG was coupled to alkaline phosphatase, eliminating 1 step in the classical ELISA. None of these assays demonstrated significant cross-reactivity with the benzamide, urea, phenylurea, or aniline components of diflubenzuron or BAY-SIR 8514. Each of the 3 assays was as sensitive as the recommended HPLC [high-pressure liquid chromatography] methodology for the analysis of diflubenzuron in water. Low cost was a major advantage of these solid-phase immunoassays over classical procedures.

Descriptors/Keywords: RABBIT, INSECT GROWTH REGULATOR, ALKALINE, PHOSPHATASE, SOLID PHASE IMMUNOASSAY, CROSS REACTIVITY

Record - 1332

SYNTHESIS OF HAPTENS AND POTENTIAL RADIO LIGANDS AND DEVELOPMENT OF ANTIBODIES TO INSECT GROWTH REGULATORS DIFLUBENZURON AND BAY-SIR-8514 N-4 TRI FLUOROMETHOXYPHENYLAMINOCARBONYL-2-CHLORO BENZAMIDE

WIE S I; SYLWESTER A P; WING K D; HAMMOCK B D

J AGRIC FOOD CHEM 30 (5). 1982. 943-948.

Full Journal Title: Journal of Agricultural and Food Chemistry

Language: ENGLISH

ABSTRACT

A variety of synthetic approaches were undertaken, leading to potential haptens and radioligands for

the benzoylphenylurea insect growth regulators, diflubenzuron and BAY-SIR 8514. One successful approach involved derivation of the aniline nitrogen by ethyl 4-bromobutyrate followed by reaction with an appropriate isocyanate and cleavage of the ethyl ester to yield a free carboxypropyl handle. Useful haptens were also synthesized by using a 3'-phenolic metabolite of diflubenzuron as well as acetate and amine functionalities in the 4' position, while the N-sulfonyl bond proved too unstable for use as an antigen. With the exception of the sulfonylated derivatives, the haptens lacked significant biological activity on 3 insect spp. [*Culex pipiens quinquefasciatus*, *Musca domestica* and *Trichoplusia ni*]. Following protein coupling by the active ester or water-soluble diimide method, antibodies were raised to 2 diflubenzuron haptens in each of 7 rabbits immunized as demonstrated by radioimmunoassay using [¹⁴C]diflubenzuron, Ouchterlony gel diffusion and immunoelectrophoresis.

Descriptors/Keywords: CULEX-PIPIENS-QUINQUEFASCIATUS, MUSCA-DOMESTICA, TRICHOPLUSIA-NI, RABBIT, PROTEIN COUPLING, RADIO IMMUNOASSAY, IMMUNO ELECTROPHORESIS

Record - 1333

SOYBEAN GLYCINE-MAX L. DELTA PINE 415 DELTA PINE 105 DAVIS ASGROW 5980
TERRA VIG 708 SOYBEAN LOOPER PSEUDOPUSIA INCLUDENS WALKER CONTROL OF
SOYBEAN LOOPERS ON SOYBEAN 1989

WIER A T; MINK J S; BOETHEL D J; LEONARD B R; BURRIS E

THOMAS, J. H. (ED.). INSECTICIDE AND ACARICIDE TESTS, VOL. 16. 327P.

ENTOMOLOGICAL SOCIETY OF AMERICA: LANHAM, MARYLAND, USA. ILLUS. PAPER. 0
(0). 1991. 229-231.

Language: ENGLISH

Descriptors/Keywords: LARVIN, LANNATE, AMBUSH, DIPEL, DIMILIN

Record - 1334

WILCOX, H. AND T. COFFEY. 1978. "ENVIRONMENTAL IMPACTS OF DIFLUBENZURON (DIMILIN) INSECTICIDE", FOREST INSECT AND DISEASE MANAGEMENT, NORTHEASTERN AREA, STATE AND PRIVATE FORESTRY, USDA, FOREST SERVICE, BROOMALL, PA. 18PP.

Record -1335

WILDE, P. C. 1977. RESIDUES OF DIFLUBENZURON AND ITS METABOLITES P-CHLOROPHENYLUREA AND 2,6 DIFLUOROBENZOIC ACID IN MUSHROOMS COMPOST + CASING (THE NETHERLANDS 1976); REPORT PHILIPS-DUPHAR B. V.

Record -1336

WILDE, P. C. AND P. BUISMAN. 1976. RESIDUES OF DIFLUBENZURON IN POULTRY TISSUES: REPORT NO. 56630/95/76. UNPUBLISHED STUDY RECEIVED JULY 31, 1978 UNDER 148-1259. PREPARED BY PHILLIPS-DUPHAR, B. V. SUBMITTED BY THOMPSON-HAYWARD CHEMICAL CO., KANSAS CITY, KS..

Record - 1337

EVALUATION OF DIFLUBENZURON FORMULATIONS ON SELECTED INSECT PARASITOIDS AND PREDATORS

WILKINSON J D; BIEVER K D; IGNOFFO C M; PONS W J; MORRISON R K; SEAY R S

J GA ENTOMOL SOC 13 (3). 1978 227-236.

Full Journal Title: Journal of the Georgia Entomological Society

Language: ENGLISH

ABSTRACT

The insect growth regulator (IGR) diflubenzuron as a 25% WP [wetttable powder] in: H₂O, Savol oil (2% em. [emulsifiers]) + H₂O; Sun oil (2% em.) + H₂O; Savol oil, or Sun oil 7-N; was topically applied (0.25 .mu.l/insect). IGR in H₂O applied to adults of *Apanteles marginiventris* (Cresson), *Voria uralis* (Fallen), *Chrysopa carnea* (Stephens), *Geocoris punctipes* (Say) and *Hippodamia convergens* (Guerin Menneville) caused no significant mortality from concentrations .ltoreq. 10,000 ppm. When adults of these species were treated with IGR in Savol oil + H₂O at 2100 ppm mortality was not significant. Sun oil used alone as a carrier was extremely toxic to adults of *C. carnea*. When 3rd instar *C. carnea* larvae were treated with the IGR + H₂O at 10,000 ppm, mortality was significant; however, mortality was non-significant at 100 ppm. IGR in Savol + H₂O or Sun oil + H₂O produced significant mortality at 2100 ppm and 1000 ppm but at 21.0 ppm in Sun oil + H₂O mortality was not significant. Mortality from diflubenzuron in H₂O for 4th instar *H. convergens* larvae and 5th instar *G. punctipes* nymphs was not significantly different from the controls at 10,000 ppm. IGR in Savol + H₂O or Sun oil + H₂O at 2100 ppm did not cause significant mortality of *G. punctipes* nymphs. Parasitization by *A. marginiventris*, predation by *G. punctipes*, and fertility and fecundity by both species were also unaffected at 2100 ppm. Diflubenzuron could be used in an integrated pest management system to conserve adult entomophagous insects and some immatures, when compared with effects of broad spectrum insecticides.

Descriptors/Keywords: APANTELES-MARGINIVENTRIS, VORIA-RURALIS, CHRYSOPA-CARNEA, GEOCORIS-PUNCTIPES, HIPPODAMIA-CONVERGENS, ENTOMOPHAGOUS INSECTS, INSECTICIDES, INSECT GROWTH REGULATOR, OIL, TOPICALLY APPLIED, MORTALITY, ADULTS, TOXIC, INSTAR, NYMPHS, PEST MANAGEMENT

Record - 1338

WILLEMS, A. G. M. 1986. SUMMARY OF BREAKDOWN OF DIFLUBENZURON IN SOILS, HYDROSOILS AND WATER. REPORT DUPHAR B. V. NO. 56635/06/1986.

Record - 1339

WILLEMS, A. G. M., W. MAAS, AND W. B. NIMMO. 1983. THE ENVIRONMENTAL FATE OF DIFLUBENZURON (INTER-OFFICE USE ONLY) RAP. INT. CONF. ENVIRONMENTAL HAZARDS OF AGROCHEMICALS IN DEV. COUNTRIES.

Record - 1340

DIFLUBENZURON INTESTINAL ABSORPTION AND METABOLISM IN THE RAT

WILLEMS A G M; OVERMARS H; SCHERPENISSE P; DE LANGE N; POST L C

XENOBIOTICA 10 (2). 1980. 103-112.

Full Journal Title: Xenobiotica

Language: ENGLISH

ABSTRACT

The metabolic fate of the insecticide diflubenzuron was investigated in the rat with radioactively labeled forms of the compound. Intestinal absorption, measured as the sum of urinary and biliary excretion, diminished greatly with increasing dose, from about 50% at 4 mg/kg to about 4% at 900 mg/kg. Excretion was almost complete at 72 h after dosing. At that time up to 4% of a dose was recovered from the carcasses of the rats. No detectable excretion of radioactive CO₂ occurred (< 0.05% of dose). The metabolic pattern in urine and bile was investigated with diflubenzuron labeled with both ³H and ¹⁴C. No unchanged compound was detected. About 80% of the metabolites appeared to have the basic diflubenzuron structure intact. Three of these, hydroxylated at either aromatic ring, were identified; they were largely excreted as conjugates in the bile. The remainder, also largely excreted in the bile, constituted very polar material. About 20% of the diflubenzuron underwent scission of the ureido bridge. One scission product, 2,6-difluorobenzoic acid, was largely excreted as such in the urine. Its counterpart, 4-

chlorophenylurea, was not present in urine or bile in appreciable quantity; nor was 4-chloraniline detected.

Descriptors/Keywords: INSECTICIDE, URINE, BILE

Record - 1341

WILSON, D. M. AND M. T. K. WAN. 1977 EFFECTS OF ORTHENE AND DIMILIN INSECTICIDES ON SELECTED NON-TARGET ARTHROPODS IN A DOUGLAS-FIR FOREST ENVIRONMENT: REPORT NO. EPS-5-PR-76-4. US ENVIRONMENTAL PROTECTION SERVICE, PACIFIC REGION, POLLUTION ABATEMENT BRANCH, UNPUBLISHED STUDY.

Record - 1342

ACUTE TOXICITY OF DIFLUBENZURON DFB TO VARIOUS LIFE STAGES OF THE GRASS SHRIMP PALAEMONETES PUGIO

WILSON J E H; COSTLOW J D

WATER AIR SOIL POLLUT 33 (3-4). 1987. 411-418.

Full Journal Title: Water Air and Soil Pollution

Language: ENGLISH

ABSTRACT

The acute toxic effects of diflubenzuron (DFB) on various life stages of the grass shrimp, *P. pugio*, were determined using a static renewal system. It was observed that the larvae and the postlarvae were the most sensitive to acute DFB toxicity; 96-hr LC50's being 1.44 and 1.62 .mu.g L-1 respectively. Also variations among the 96-hr LC50's for these two life stages were the lowest (11.59% for larvae and 30.06% for postlarvae) compared to 68.9% for males and non-ovigerous females. Ovigerous female grass shrimp (hence the embryos) appeared to be the most resistant to acute toxic effects of DFB with a mean LC50 of 6985 .mu.g L-1. The limitations of LC50 data and the importance of molt-related sensitivity of the different life stages of *P. pugio* to diflubenzuron are discussed.

Descriptors/Keywords: LARVA, MOLTING, INSECTICIDE, SEX DIFFERENCE, WATER POLLUTION

Record - 1343

DELAYED EFFECTS OF DIFLUBENZURON ON THE SWIMMING AND VERTICAL DISTRIBUTION OF PALAEMONETES PUGIO LARVAE

WILSON J E H; FORWARD R B JR; COSTLOW J D

VERNBERG, W. B., ET AL. (ED.). THE BELLE W. BARUCH LIBRARY IN MARINE SCIENCE, NO. 17. POLLUTION PHYSIOLOGY OF ESTUARINE ORGANISMS; SYMPOSIUM, GEORGETOWN, SOUTH CAROLINA, USA, OCTOBER 21-24, 1985. XIII+458P. UNIVERSITY OF SOUTH CAROLINA PRESS: COLUMBIA, SOUTH CAROLINA, USA. ILLUS. ISBN 0-87249-510-8. 0 (0). 1987. 351-372.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: INSECTICIDE, TOXICITY, PHOTOKINESIS

Record - 1344

AGE-DEPENDENT RESPONSE OF PALAEMONETES-PUGIO EMBRYOS FOLLOWING BRIEF EXPOSURE TO DIFLUBENZURON

WILSON J E H

ANNUAL MEETING OF THE AMERICAN SOCIETY OF ZOOLOGISTS, ANIMAL BEHAVIOR SOCIETY, THE CRUSTACEAN SOCIETY, INTERNATIONAL ASSOCIATION OF ASTACOLOGY, AND THE SOCIETY OF SYSTEMATIC ZOOLOGY, NASHVILLE, TENN., USA, DEC. 27-30, 1986.

AM ZOOL 26 (4). 1986. 34A.
Language: ENGLISH
Document Type: CONFERENCE PAPER

Descriptors/Keywords: ABSTRACT, SUBLETHAL TOXICITY, NONTARGET ORGANISM, INSECT GROWTH REGULATOR

Record - 1345

COMPARATIVE TOXICITY OF TWO DIMILIN FORMULATIONS TO THE GRASS SHRIMP
PALAEEMONETES PUGIO

WILSON J E H; COSTLOW J D

BULL ENVIRON CONTAM TOXICOL 36 (6). 1986. 858-865.

Full Journal Title: Bulletin of Environmental Contamination and Toxicology

Language: ENGLISH

Descriptors/Keywords: TECHNICAL GRADE, WETTABLE POWDER-25, SAND, GRANULE, INSECTICIDE, MORTALITY

Record - 1346

EFFECTS OF EMBRYONIC EXPOSURE TO SUBLETHAL CONCENTRATIONS OF DIMILIN ON
THE PHOTOBHAVIOR OF GRASS SHRIMP PALAEEMONETES PUGIO LARVAE

WILSON J E; FORWARD R B JR; COSTLOW J D

VERNBERG, F. J. ET AL. (ED.). BELLE W. BARUCH LIBRARY IN MARINE SCIENCE, NO. 13.
MARINE POLLUTION AND PHYSIOLOGY: RECENT ADVANCES; MEETING, MYSTIC, CONN.,
USA, NOV. 1-3, 1983. XVII+545P. UNIVERSITY OF SOUTH CAROLINA PRESS: COLUMBIA,
S.C., USA. ILLUS. MAPS. ISBN 0-87249-446-2. 0 (0). 1985. 377-396.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: PHOTOTAXIS, INSECTICIDE

Record - 1347

ANALYSIS OF DIFLUBENZURON BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY USING
DEUTERATED DIFLUBENZURON AS INTERNAL STANDARD

WIMMER M J; SMITH R R

J AGRIC FOOD CHEM 39 (2). 1991. 280-286.

Full Journal Title: Journal of Agricultural and Food Chemistry

Language: ENGLISH

ABSTRACT

A new and rapid gas chromatographic/mass spectrometric analytical procedure for insect growth regulator diflubenzuron, a phenylurea-based insecticide, has been developed. Diflubenzuron is decomposed by the heat of a gas chromatograph into three reproducible fragments, 4-chlorophenyl isocyanate, 4-chloroaniline, and 2,6-difluorobenzamide, which elute separately from the GC column. The source of the chloroaniline appears to be the thermal breakdown of chlorophenyl isocyanate. No difluorobenzoic acid is generated, confirming that the heat-labile bond of diflubenzuron is different from the bond cleaved during base-catalyzed hydrolysis or microbial degradation. Advantage is taken of this along with the use of dideuterated diflubenzuron as an internal standard, and the selected ion monitoring capability of mass spectrometry, to enable analysis of diflubenzuron in complex extracts of vegetation samples without purification or derivatization. Detectability levels are similar to or better than those of currently used methods. Extraction and analysis of diflubenzuron from dosed leaves demonstrate the selectivity and utility of the technique.

Descriptors/Keywords: INSECT GROWTH REGULATOR, CHLOROPHENYL ISOCYANATE, MICROBIAL DEGRADATION, PLANT EXTRACTS, INSECTICIDE

Record - 1348

CONTROL OF ANTICARSIA GEMMATALIS LEPIDOPTERA NOCTUIDAE IN SOYBEAN WITH THE INSECT GROWTH INHIBITOR DIFLUBENZURON

WINDER J A

REV BRAS ENTOMOL 28 (3). 1984. 263-268.

Full Journal Title: Revista Brasileira de Entomologia

Language: ENGLISH

ABSTRACT

Diflubenzuron at dosages of 20 and 25 g a.i./ha provided > 80% control of *A. gemmatalis* Huebner larvae of up to 4 wk and > 60% control of *Pseudoplusia includens* Walker larvae for up to 3 wk. *Bacillus thuringiensis* (500 g/ha) gave efficient control initially but its residual activity fell sharply after 1 wk. Entomogenous fungi causes substantial larval mortality only after 27 days posttreatment.

Descriptors/Keywords: PSEUDOPUSIA-INCLUDENS, BACILLUS-THURINGIENSIS, FUNGI, LARVAL MORTALITY

Record - 1349

EFFECTS OF SELECTED INSECTICIDES ON ROMANOMERMIS CULICIVORAX A MERMITHID NEMATODE PARASITE OF MOSQUITO LARVAE

WINNER R A; STEELMAN C D; SCHILLING P E

DEP. ENTOMOL., LA. STATE UNIV., BATON ROUGE, LA. 70803, USA.

MOSQ NEWS 38 (4). 1978 . 546-553.

Full Journal Title: Mosquito News

Language: ENGLISH

ABSTRACT

Dosage-mortality tests conducted with preparastic (infective) stage *R. culicivorax* Ross and Smith showed that insecticide concentrations of 0.0021 ppm chlorpyrifos, 0.018 ppm naled, 0.36 ppm propoxur, 1.06 temephos, 1.10 ppm fenthion, 2.95 ppm methoprene, 4.36 ppm diflubenzuron and 6.78 ppm malathion caused a 50% loss of swimming activity and impaired the ability of the nematode to locate and infect mosquito larvae. Chlorpyrifos was significantly ($P < 0.05$) more toxic to the infective stage than the other insecticides tested. Malathion caused significantly ($P < 0.05$) less mortality to the infective stage of the nematode than the other insecticides tested. The infective stage was significantly ($P < 0.05$) less susceptible to all the insecticides tested, except naled, at the LC90 level than were 2nd instar *Culex quinquefasciatus* Say larvae. Naled and propoxur significantly reduced ($P < 0.05$) the infectivity of the preparastic stage at the LC50 response level established for 2nd instar *C. quinquefasciatus* larvae. Chlorpyrifos, malathion, fenthion, temephos, diflubenzuron and methoprene caused no significant reduction ($P > 0.05$) of the infectivity of *R. culicivorax* at their respective LC50 response levels for 2nd instar *C. quinquefasciatus* larvae. Treatment of parasitized larvae, 24 h after infection with insecticides, had no adverse effect on the viability of the postparasites that emerged. Juvenile nematodes, less than 7 days after emerging, molted to adults which mated and laid viable eggs after treatment with insecticides. The rate of egg hatching after exposure to malathion, fenthion and methoprene was significantly lower ($P < 0.05$) than that of eggs exposed to propoxur and naled. No significant differences in percent egg hatch ($P < 0.05$) existed between eggs treated with insecticides and the untreated eggs.

Descriptors/Keywords: CULEX-QUINQUEFASCIATUS, CHLORPYRIFOS, NALED, PROPOXUR, TEMEPHOS, FENTHION, METHOPRENE, DIFLUBENZURON, MALATHION, SWIMMING ACTIVITY, TOXIC, MORTALITY, INFECTIVE STAGE, MOLT, JUVENILES, VIABLE EGGS

Record - 1350

WITTMAN, D. 1981. DETERMINATION OF LC50 FOR DIMILIN 25-WP IN HONEY BEE BROOD BY A NEW APIS LARVAE TEST. J. OF APPL. ENTOMOL. 92(2): 165-172.

Record - 1351

USEFULNESS OF TWO DIPHENYLBENZOYLUREA INSECT GROWTH REGULATORS AGAINST THE BOLL WEEVIL COLEOPTERA CURCULIONIDAE

WOLFENBARGER D A; NEMEC S J

J ENTOMOL SCI 26 (4). 1991. 466-473.

Full Journal Title: Journal of Entomological Science

Language: ENGLISH

ABSTRACT

Topical applicaitons at submicrogram levels of the insect growth regulators (IGR) penfluron and diflubenzuron prevented the hatch of boll weevil, *Anthonomus grandis* Boheman, eggs. Neither compound was toxic to the weevil, however field-cage studies showed that diflubenzuron greatly reduced emergence of weevils from squares. In all field tests spray applications were initiated at first-one third grown square (< 1 cm dia) and continued for 13 to 17 applications during 51 days, throughout the cotton growing season on a 3-5 day schedule. In 1981, cotton sprayed with penfluron diluted in water plus petroleum oil had significantly greater yields than cotton sprayed with penfluron only. In 1982, diflubenzuron and penfluron diluted in oil and water and applied at 0.07 kg/ha, reduced boll weevil emergence from squares 57 to 78% compared to emergence in untreated plots. In 1983, emergence of adults from bolls was reduced 39% in plots sprayed in diflubenzuron at a rate of 0.28 kg A.I./ha. In 1981, no reduction in adult emergence from bolls only was observed in plots sprayed with penfluron at rate of 0.07 kg A.I./ha; when penfluron was applied at 3 day intervals in oil boll weevil emergence from squares was significantly reduced. Yields of seed cotton were significantly greater in plots srayed on a 3-5 day schedule with penfluron or diflubenzuron in oil, at a rate of 0.07 or 0.28 kg A.I./ha respectively, when compared to the untreated check; they were 926, 1697 to 1874, and 726 kg/ha in 1981, 1982 and 1983, respectively. In 1981 and 1982, predator populations (mostly Hemiptera and spiders) in plots sprayed with either diflubenzuron or penfluron, with or without oil, were reduced significantly compared to populations in the untreated check.

Descriptors/Keywords: COTTON PEST, PENFLURON, DIFLUBENZURON, EMERGENCE, HATCH

Record - 1352

CUTICULAR MECHANICS DURING LARVAL DEVELOPMENT OF THE TOBACCO HORNWORM MANDUCA SEXTA

WOLFGANG W J; RIDDIFORD L M

J EXP BIOL 128 (0). 1987. 19-34.

Full Journal Title: Journal of Experimental Biology

Language: ENGLISH

ABSTRACT

Tensile properties of the larval cuticle of *Manduca sexta* were measured during the fifth instar. It was found that as the larvae grew and the cuticle thickened, the tangent modulus (intrinsic stiffness) for the cuticle declined rapidly. The extensibility of the cuticle during the growth period remained relatively high and fairly constant, while the flexural stiffness remained low. Subsequently, during the wandering and burrowing stage the extensibility decreased dramatically. Finally, in the prepupal stage extensibility remained low while flexural stiffness was highest. Using the cuticle deposition inhibitor diflubenzuron we demonstrated that the increase in larval cuticular flexural stiffness was required for normal pupation to proceed. Thus, during larval growth the cuticle remains flexible and extensible. Once growth is completed, the cuticle becomes much less extensible and more rigid, converting the previously

hydrostatic skeleton into a self-supporting skeleton. This conversion was associated with changes in cuticular structure, hydration and protein composition.

Descriptors/Keywords: DIFLUBENZURON, CUTICLE DEPOSITION INHIBITOR, PROTEIN COMPOSITION, CHANGES, HYDRATION, STRUCTURAL CHANGES, FLEXIBILITY, EXTENSIBILITY

Record - 1353

IN-VITRO DEGRADATION OF DIFLUBENZURON DIMILIN DURING DERIVATIZATION WITH PER FLUORO ANHYDRIDES

WOROBEY B L; WEBSTER G R B

J CHROMATOGR 153 (2). 1978 423-432.

Full Journal Title: Journal of Chromatography

Language: ENGLISH

ABSTRACT

Diflubenzuron [1-(4-chlorophenyl)-3-(2,6-difluorobenzoyl)urea] [an insect growth regulator] and one of its metabolites, 4-chlorophenylurea undergo cleavage during reaction with trifluoroacetic and heptafluorobutyric anhydrides. The products, N-monoperfluoroacyl-2,6-difluorobenzamide (from diflubenzuron) and N-monoperfluoroacyl-4-chloroaniline (from diflubenzuron and 4-chlorophenylurea) were identified as occurring during derivatization and not from thermal degradation of the 1- or 3-N-monoperfluoroacyl derivatives of the intact diflubenzuron in the GLC injection port or on the GLC column. Elucidation of an in vitro cleavage reaction and a proposed degradation scheme is presented based on electron capture-GLC, TLC, GLC-mass spectrometry and direct-inlet probe mass spectrometric analysis.

Descriptors/Keywords: INSECT GROWTH REGULATOR, 4 CHLOROPHENYL UREA, N MONO PER FLUOROACYL-2 6-DIFLUORO BENZAMIDE, N MONO PER FLUOROACYL-4-CHLORO ANILINE, CLEAVAGE, THERMAL DEGRADATION, ELECTRON CAPTURE, THIN LAYER CHROMATOGRAPHY, MASS SPECTROMETRY SPECTROMETRIC ANALYSIS

Record - 1354

WOROBEY, B. L., AND G. R. B. WEBSTER. 1977. GAS-LIQUID CHROMATOGRAPHIC DETERMINATION OF DIFLUBENZURON (DIMILIN) [A BROAD SPECTRUM INSECTICIDE-LARVICIDE] IN WATER AS ITS TRIFLUOROACETYL DERIVATIVE. J. ASSOC. OFF. ANAL. CHEM. 60(1): 231-217.

Record - 1355

WRENN, N. R. AND R. A. MCGHIE. 1986. AN EVALUATION OF THE INSECT GROWTH REGULATORS DIFLUBENZURON AND TEFLUBENZURON FOR CONTROL OF LUCERNE FLEA (SMINTHURUS VIRIDIS). PROCEEDINGS - NEW ZEALAND WEED AND PEST CONTROL CONFERENCE. JULY 1986 . VOL. 39. PP. 27032.

Record - 1356

SINGLE-FAMILY DWELLINGS GERMAN COCKROACH BLATTELLA GERMANICA L. EFFICACY OF INSECTICIDE FORMULATIONS 1989

WRIGHT C G; DUPREE H E JR

THOMAS, J. H. (ED.). INSECTICIDE AND ACARICIDE TESTS, VOL. 16. 327P.

ENTOMOLOGICAL SOCIETY OF AMERICA: LANHAM, MARYLAND, USA. ILLUS. PAPER. 0 (0). 1991. 278.

Language: ENGLISH

Descriptors/Keywords: CHLORPYRIFOS, PYRETHRUM, CYFLUTHRIN, DIFLUBENZURON, ESBIOTHRIN

Record - 1357

LABORATORY EVALUATION OF A METHOD OF STERILIZING THE BOLL WEEVIL
ANTHONOMUS GRANDIS GRANDIS

WRIGHT J E; ROBERSON J

J ECON ENTOMOL 74 (6). 1981. 696-697.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Reproduction by 1,350,000 adults of *A. grandis grandis* Boheman fed 100 ppm diflubenzuron for 5 days and exposed to 10 krad on day 6 was evaluated in the laboratory. Of the 1,701,240 eggs collected from treated adults, 99.999% were sterile.

Descriptors/Keywords: DIFLUBENZURON, REPRODUCTION, IRRADIATION

Record - 1358

WRIGHT, J. E. 1980. UTILIZATION OF DIFLUBENZURON FOR INSECT CONTROL (CROP AND FOREST PESTS, FLIES, MOSQUITOS). REGULATION OF INSECT DEVELOPMENT AND BEHAVIOR. INTERNATIONAL CONVERENCE, KARPACZ, POLAND. JUNE 23-28. EDITOR IN CHIEF. MARIAN KLOZA. PP. 1113-1130. WROCLAW (POLAND): WYDAWNICTWO POLITECHNIKI WROCLAWSKIEJ, 1981.

Record - 1359

BOLL WEEVIL ANTHONOMUS GRANDIS STERILITY EFFECTS OF DIFFERENT
COMBINATIONS OF DIFLUBENZURON ANTIBIOTICS FUMIGATION AND IRRADIATION

WRIGHT J E; MCCOY J R; DAWSON J R; ROBERSON J; SIKOROWSKI P P

SOUTHWEST ENTOMOL 5 (2). 1980. 84-89.

Full Journal Title: Southwestern Entomologist

Language: ENGLISH

ABSTRACT

Studies were made of sterility, mortality, microbial contamination and mating behavior of *A. grandis* Boheman after different kinds of treatments. Diflubenzuron and antibiotics were administered in the adult diet, and the weevils were further treated by irradiation (10 Krad in a N atmosphere) or by fumigation with bisazir (P,P, bis (1-aziridinyl)-N-methylphosphinothioic amide). When adults were fed diflubenzuron for 5 days after emergence, followed by irradiation or fumigation on the 6th day, a high level of sterility (99%) was induced. Diflubenzuron treatment apparently reduced sperm transfer and increased mortality, and antibiotics reduced pheromone production.

Descriptors/Keywords: MICROBIAL CONTAMINATION, ANTIBIOTIC, NITROGEN, FUMIGATION, BISAZIR, MORTALITY, PHEROMONE

Record - 1360

COMPARISON OF 3 STERILIZATION PROCEDURES ON THE QUALITY OF THE MALE BOLL
WEEVIL ANTHONOMUS GRANDIS GRANDIS

WRIGHT J E; MOORE R; MCCOY J; WIYGUL G; HAYNES J

J ECON ENTOMOL 73 (4). 1980. 493-496.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Irradiation (10 krad in a N atmosphere) plus dipping in 0.1% diflubenzuron in acetone of 6 day old *A. grandis grandis* Boheman was selected over fumigation plus dipping of adults and fractionated irradiation of pupae as the method of choice for sterilization for production of quality weevils. The results for this method were: sterility 98.5% and mortality 34.5% at 7 days post-treatment; mating with sperm transfer 78.5% and 59.6% of normal at 3 and 7 days post-treatment, respectively; and pheromone production of 0.4 .mu.g/adult per day. Fumigation plus penfluron produced comparable sterile males, but irradiation was more convenient and safer.

Descriptors/Keywords: IRRADIATION, NITROGEN, DIFLUBENZURON, MORTALITY, SPERM TRANSFER, PHEROMONE PRODUCTION, FUMIGATION, PENFLURON

Record - 1361

BOLL WEEVIL *ANTHONOMUS GRANDIS GRANDIS* EFFECTS OF DIFLUBENZURON ON SPERM TRANSFER MORTALITY AND STERILITY

WRIGHT J E; ROBERSON J; DAWSON J R

J ECON ENTOMOL 73 (6). 1980. 803-805.

Full Journal Title: Journal of Economic Entomology

Language: ENGLISH

ABSTRACT

Adults of *A. grandis grandis* Boheman were held for 5 days after emergence on diet containing several levels of diflubenzuron (50-500 ppm) diet and then exposed to 10 krad of gamma irradiation from a ¹³⁷Cs source in a N atmosphere on the 6th day. This procedure sterilized both males and females. The lower levels of diflubenzuron (50-100 ppm) did not affect the transfer of sperm by treated males to virgin females, whereas levels of 200-500 ppm significantly ($P > 0.05$) reduced sperm transfer. The feeding of diflubenzuron in the adult diet did not contribute to adult mortality, but did significantly lower egg hatch and larval development ($P > 0.01$). Diflubenzuron in the diet, plus irradiation, was used for sterilizing the boll weevils for the boll weevil eradication trial in North Carolina and Virginia [USA] in 1979.

Descriptors/Keywords: GAMMA IRRADIATION, NITROGEN, MORTALITY, NORTH-CAROLINA, VIRGINIA USA

Record - 1362

BOLL WEEVIL MATING ABILITY STERILITY AND SURVIVAL OF IRRADIATED AND FUMIGATED ADULTS OF DIFFERENT AGES

WRIGHT J E; HAYNES J W; MCCOY J R; DAWSON J R

SOUTHWEST ENTOMOL 4 (1). 1979. 53-58.

Full Journal Title: Southwestern Entomologist

Language: ENGLISH

ABSTRACT

The percentage of male boll weevils, *Anthonomus grandis grandis* Boheman, that mated successfully (transferred spermatozoa to virgin females) differed when males were newly emerged or aged (about 6 days old) at time of treatment with irradiation and diflubenzuron or fumigation and penfluron. More males were available to mate after the irradiation treatment because of the significantly higher mortality ($P < 0.05$) among fumigated males at day 7 post-treatment. Both treatments suppressed better than 99% of the F1 population.

Descriptors/Keywords: ANTHONOMUS-GRANDIS-GRANDIS, DIFLUBENZURON, PENFLURON SPERMATOZOA, VIRGIN FEMALE, AGE, EMERGENCE, MORTALITY

Record - 1363

DIFLUBENZURON OVICIDAL ACTIVITY AGAINST ADULT STABLE FLIES EXPOSED TO TREATED SURFACES OR TO TREATED ANIMALS

WRIGHT J E; SPATES G E; KUNZ S E

SOUTHWEST ENTOMOL 3 (1). 1978 5-13.

Full Journal Title: Southwestern Entomologist

Language: ENGLISH

ABSTRACT

The insect growth regulator, diflubenzuron [Thompson-Hayward TH 6040; N-[[[4-chlorophenyl]amino]carbonyl]-2,6-difluorobenzamide] prevented development of adult *Stomoxys calcitrans* (L.) from eggs of females exposed by contact with treated walls or animals. The 25% flowable water soluble (2F formulation) was more effective on wall surfaces than the 25% WP [wetttable powder]. Adult flies exposed to treated brick, plywood, or straw walls for 48 h had reduced hatch, and development to the adult was inhibited in those larvae that did hatch. The effective levels of treatment for wall surfaces and steers were 1 and 0.5%.

Descriptors/Keywords: STOMOXYS-CALCITRANS, STEERS, GROWTH REGULATOR

Record - 1364

STABLE FLY CONTROL WITH DIFLUBENZURON APPLIED TO ADULT RESTING SURFACES IN CATTLE FEEDLOTS

WRIGHT J E; CAMPBELL J B; OEHLER D D; SCHUGGART J

SOUTHWEST ENTOMOL 2 (3). 1977 155-158.

Full Journal Title: Southwestern Entomologist

Language: ENGLISH

ABSTRACT

Egg hatch and development of the adult stable fly *Stomoxys calcitrans* (L.) were affected when adult resting surfaces in cattle feedlots were treated with 1% diflubenzuron [Thompson-Hayward TH 6040; N-[[[4-chlorophenyl]amino]carbonyl]-2,6-difluorobenzamide]. In a 35-day test in one unisolated feedlot, adult development was reduced by 85%; in a 95-day test in another unisolated feedlot, it was reduced by 78%.

Descriptors/Keywords: STOMOXYS-CALCITRANS, GROWTH REGULATOR, INSECTICIDE, EGG HATCH, DEVELOPMENT

Record - 1365

EFFECTS OF ATABRON ON PHENOLOXIDASE AND CHITINASE IN THE CUTICLE OF *OSTRINIA FURNACALIS* LARVA

WU G; SHANG Z-Z

ACTA ENTOMOL SIN 35 (3). 1992. 306-311.

Full Journal Title: Acta Entomologica Sinica

Language: CHINESE

ABSTRACT

Atabron (chlorfluazuron, IKI-7899), a new chitin inhibitor, is a very effective pesticide. The symptom of *Ostrinia furnacalis* larva treated with atabron was found to be similar to that by TH6040 (diflubenzuron). However, there is a great difference in their toxicity, atabron being 110 times higher. Our experimental results indicated that this difference was due to the difference in promoting the phenoloxidase and chitinase activities in the larval cuticle. The activity of cuticular phenoloxidase of fifth instar larvae fed with atabron or TH6040 increased 276% and 28% respectively, and the activity of chitinase 42.3% and 3.6% respectively. When they were injected into the abdomen of the fifth instar larvae, the increase of phenoloxidase was 74.9% and 39% respectively, and the increase of chitinase 68.2% and 28.9% respectively. The increase of phenoloxidase and chitinase activities are presumably the important factors

impeding the growth and ecdysis of the corn borer larvae.

Descriptors/Keywords: DIFLUBENZURON, PESTICIDE TOXICITY, GROWTH ECDYSIS

Record - 1366

THE EFFECT OF DIFLUBENZURON DIMILIN ON THE ECDYSTEROID TITER AND NEURONAL ACTIVITY OF PERIPLANETA AMERICANA L

WUTTIG U; BAIER U; PENZLIN H

PESTIC BIOCHEM PHYSIOL 39 (1). 1991. 8-19.

Full Journal Title: Pesticide Biochemistry and Physiology

Language: ENGLISH

ABSTRACT

The insecticide diflubenzuron (DFB) affected the larval-adult development of *Periplaneta americana* when administered by feeding or injection. Usually, the larvae died during adult ecdysis due to the inability to split their larval cuticle. In other cases, they did ecdyse partially or completely, but died during the first day after emergence. The duration of the larval instar after DFB treatment was prolonged. By radioimmunoassay the in vitro ecdysteroid production of the prothoracic gland as well as the ecdysteroid titer of the hemolymph in different periods of the last larval instar of *P. americana* was determined. It was shown that the first increase of the ecdysteroid production of the molting gland during the instar was unaffected by DFB in contrast to the second peak in the ecdysteroid production, which was missing. The dose-response relationship of the effect of DFB and dimethylsulfoxide (DMSO) as the solvent of DFB on the spontaneous neuronal activity of the frontal ganglion was studied in vitro. Administration of these substances resulted in a high stimulation of the spontaneous burst activity coming from the frontal ganglion and going via nervus connectivus to the somata in the protocerebrum. The action of DFB and DMSO seems to be a direct effect on the cholin-sensitive sites at synaptic regions in addition to the inhibition of the acetylcholinesterase (EC 3.1.1.7).

Descriptors/Keywords: DMSO, HEMOLYMPH DEVELOPMENT, ECDYSIS, MORTALITY, RADIOIMMUNOASSAY, ACETYLCHOLINESTERASE INHIBITION

Record - 1367

EFFECTS OF DIFLUBENZURON AND METHOPRENE ON THE EMERGENCE OF INSECTS AND THEIR DENSITY IN AN OUTDOOR EXPERIMENTAL STREAM

YASUNO M; SATAKE K

CHEMOSPHERE 21 (10-11). 1990. 1321-1336.

Full Journal Title: Chemosphere

Language: ENGLISH

ABSTRACT

Benthic communities in outdoor experimental streams were exposed to 1 and 10 mg l⁻¹ of diflubenzuron and the same concentrations of methoprene for 30 min, respectively. The effects of these chemicals were assessed daily by examining drifting pupal exuviae over a period of one month following the treatment. Neither chemical induced the drift of macrobenthos at the time of application. However, diflubenzuron affected the emergence of all species examined. A high larval mortality of a species of chironomid was observed directly in the stream treated with diflubenzuron, where mayfly nymphs and caddisfly larvae were also decreased. However, in the stream treated with methoprene, no marked mortality of benthos could be observed, but chironomids and caddisflies disappeared. Methoprene treatment not only affected the emergence of the mayfly, *Baetis sahoensis*, but caused its outbreak.

Descriptors/Keywords: BAETIS-SAHOENSIS, CHIRONOMID CADDIS FLY, TOXICITY, LARVAL MORTALITY, INSECTICIDE

Record - 1368

YEN, D. F., Y. T. TSAI, AND S. F. WANG. 1979. EFFECT OF DIMILIN ON THE GROWTH OF (THE TOBACCO CUTWORM) SPODOPTERA LITTURA (FABRICIUS). YEN CHIU PAO KAO. MEMOIRS OF THE COLLEGE OF AG. NATIONAL TAIWAN UNIV. 19(2): 53-65.

Record - 1369

YONCE, C. E. 1982. OVICIDAL EFFECTS OF LORSBAN AND DIMILIN ON PEACHTREE BORER EGGS. 1979 SYNANTHEDON EXITIOSA. INSECTICIDE AND ACARICIDE TESTS. VOL. 7 P. 35.

Record - 1370

YOUNG, M. FL, L. D. TOMBETTA, AND S. CARSON. 1986. EFFECTS OF DIFLUBENZURON ON THE EMBRYOLOGICAL DEVELOPMENT OF A FRESH WATER SNAIL (LYMNAEIDAE). REPORT BRIGHAM YOUNG UNIV., PROVO UTAH.

Record - 1371

EFFECTS OF DIFLUBENZURON ON THE MOUSE LIVER

YOUNG M F; TROMBETTA L D; CARSON S

J APPL TOXICOL 6 (5). 1986. 343-348.

Full Journal Title: Journal of Applied Toxicology

Language: ENGLISH

ABSTRACT

Diflubenzuron (DFB), a potent inhibitor of insect chitin synthesis, was administered to Swiss Webster mice in a 30-day oral intubation study. Animal groups received either no treatment, vehicle control (Polyethylene glycol 400), or DFB suspensions at doses of 125, 500, and 2000 mg/kg body weight. Hepatic glutathione S-transferase activity as well as morphological characteristics were studied. DFB was shown to elicit hepatocellular changes at all dose levels. The activities of three glutathione S-transferases (S-aryl, S-aralkyl, and S-epoxide) were all altered after DFB administration. Light microscopy revealed radial arrays of hepatocellular vacuolization between the portal and central vein areas. Electron-microscopic examination, verified by morphometric analysis, revealed degenerative changes as well as an increased volume density of the endoplasmic reticulum.

Descriptors/Keywords: DIMILIN, INSECTICIDE, ENDOPLASMIC RETICULUM, GLUTATHIONE S-TRANSFERASE, HEPATOTOXICITY, CYTOTOXICITY, HAZARDOUS MATERIALS

Record - 1372

PATHO PHYSIOLOGICAL EFFECTS OF DIFLUBENZURON ON THE MOUSE LIVER

YOUNG M F; CARSON S; TROMBETTA L

68TH ANNUAL MEETING OF THE FEDERATION OF AMERICAN SOCIETIES FOR EXPERIMENTAL BIOLOGY, ST. LOUIS, MO., USA, APR. 1-6, 1984 FED PROC 43 (3). 1984. ABSTRACT 2792.

Language: ENGLISH

Document Type: CONFERENCE PAPER

Descriptors/Keywords: ABSTRACT, HEPATO TOXICITY, MITOCHONDRIAL DEGENERATION, CYTOPLASMIC VACUOLIZATION, ENDOPLASMIC RETICULUM INSECTICIDE

Record - 1373

EFFECTS OF SEVERAL INSECT GROWTH REGULATORS ON EGG HATCH AND SUBSEQUENT DEVELOPMENT IN THE CABBAGE MAGGOT DELIA RADICUM L. DIPTERA ANTHOMYIIDAE

YOUNG T-L; GORDON R; CORNECT M

CAN ENTOMOL 119 (5). 1987. 481-488.

Full Journal Title: Canadian Entomologist

Language: ENGLISH

ABSTRACT

Eggs (24-28 h old) of *Delia radicum* (L.) were treated with the same doses of diflubenzuron, methoprene, juvenile hormone I, or precocene II. Diflubenzuron significantly reduced egg hatching compared with untreated and solvent-treated controls. Methoprene had a delayed effect, preventing eclosion of adults from pupae that subsequently developed from treated eggs. A commercial formulation of diflubenzuron, Dimilin, significantly suppressed and delayed hatching of eggs treated when 3-7 h old but not of eggs treated when 24-48 h old. Diflubenzuron may be as effective as the commercial insecticide carbofuran in protecting rutabaga slices from damage, as all larvae that did hatch died shortly afterwards.

Descriptors/Keywords: METHOPRENE, JUVENILE HORMONE I, PRECOCENE II, DIMILIN, DIFLUBENZURON, CARBOFURAN, MORTALITY

Record - 1374

EFFECT OF NEOPESTICIDE DIFLUBENZURON AND NICOTINE CYANURATE AGAINST RICE STEMBORER

ZAIDI R H; NAQVIS N H; AHMAD I

PAK J AGRIC RES 9 (4). 1988. 489-492.

Full Journal Title: Pakistan Journal of Agricultural Research

Language: ENGLISH

Subfile: BA (Biological Abstracts)

The effect of a nicotinoid, nicotine cyanurate extracted from tobacco waste dust and an Insect Growth Regulator (IGR) diflubenzuron is reported herein against a most devastating enemy of rice [*Oryza sativa*], the yellow stemborer, *Schoenobius incertulas* (Walker) and the results are compared with that reported in the literature to seek a better control strategy for the pest. The mortality increased with the increase in dose. At higher doses in diflubenzuron molting did not occur. LD50 of diflubenzuron and nicotine cyanurate was found to be 250 and 80 .mu.g/larva, respectively.

Descriptors/Keywords: ORYZA-SATIVA, SCHOENOBIOUS-INCERTULAS, CHEMICAL CONTROL, INSECT MORTALITY

Record - 1375

SUSCEPTIBILITY OF AEDES AEGYPTI TO PLASMODIUM GALLINACEUM IN COMBINED EXPOSURE TO BIOACTIVE SUBSTANCES

ZAKHAROVA N F; YAKUBOVICH V YA; GANUSHKINA L A; CHUNINA L M

MED PARAZITOL PARAZIT BOLEZNI 0 (4). 1992. 22-26.

Full Journal Title: Meditsinskaya Parazitologiya i Parazitarnye Bolezni

Language: RUSSIAN

ABSTRACT

Making use of a model pair *Aedes aegypti*-*Plasmodium gallinaceum*, the authors assess the susceptibility of mosquito female survivors to malaria agent after treatment of larvae with various bioactive substances. Eight binary combinations of 6 preparations have been tried: dimilin and uvemon, insect development regulators; fundosol and copper sulfate, fungicides; phyto bacteriomycin (PBM), a larvicidal antibiotic; bactoculicide, a bacterial agent. Combinations of PBM with compounds differing by their mechanisms of action were found to inhibit the specific effect of PBM on the vector, PBM specific effect consisting in depression of mosquito susceptibility to *P. gallinaceum*. PBM combinations with some agents may alter other parameters of the vector potential: combinations of copper sulfate or uvemon with low concentrations of PBM potentiated the larvicidal effect, and PBM

mixtures with fungicides reduced the activity of female attacks.

Descriptors/Keywords: BACTOCULICIDE, DIMILIN, UVEMON, INSECT DEVELOPMENT REGULATOR, FUNDOSOL, COPPER SULFATE, PHYTOBACTERIOMYCIN, VECTOR POTENTIAL, ALTERATION FUNGICIDE, INSECTICIDE

Record - 1376

BIO-EFFICACY OF CERTAIN CHITIN SYNTHESIS INHIBITORS ON DIPTEROUS FLIES AND MITES INHABITING DUNG OF FARM ANIMALS

ZAKI A M; DARWISH E T E; ABDELLA M M H

ANZ SCHAEDLINGSKD PFLANZENSCHUTZ UMWELTSCHUTZ 63 (4). 1990. 69-73.

Full Journal Title: Anzeiger fuer Schaedlingskunde Pflanzenschutz Umweltschutz

Language: ENGLISH

ABSTRACT

Dipterous flies are considered among the most important pests for man and domestic animals health. The efficacy of four insect growth regulators on dipterous larvae and mites inhabiting dung of two farm animals (buffalo and sheep) are compared. Also, their effectiveness on the predacious mites are discussed. Data indicate that the toxicity of the four tested IGRs, i.e., Dimilin, XRD, IKI and CME, to the dung survivors (dipterous larvae and mites) differed according to the source of dung and the occurrence of survivors themselves. In buffalo dung, Dimilin and XRD appeared to be the most toxic to the dipterous larvae and mites, respectively. While IKI gave the minimum toxicity to both survivors. On the other hand, with sheep dung an inverse trend was observed i.e., IKI and Dimilin were the most toxic to mites and dipterous larvae, respectively. Whilst, the least toxicity were obtained when CME and XRD were used on dipterous larvae and mites, respectively.

Descriptors/Keywords: BUFFALO, SHEEP, DIMILIN, XRD, IKI, CME, TOXICITY

Record - 1377

EVALUATION OF ZERTEL AND DIFLUBENZURON ON BIOLOGICAL ASPECTS OF THE EGG PARASITOID TRICHOGRAMMA EVANESCENS WESTW. AND THE APHID LION CHRYSOPELRA CARNEA STEPH

ZAKI F N; GESRAHA M A

J APPL ENTOMOL 104 (1). 1987. 63-69.

Full Journal Title: Journal of Applied Entomology

Language: ENGLISH

ABSTRACT

The two antimoulting compounds diflubenzuron and zertel showed an adverse effect on the egg parasitoid *Trichogramma evanescens* and the aphid lion *Chrysoperla carnea*. Parasitism by *T. evanescens* was markedly decreased and the immature stages failed to complete their development. When parasitism took place before spraying the insecticides, emergence of adults, longevity and fecundity markedly decreased. Both insecticides showed adverse effects on the duration and pupation of treated eggs or larvae of *Chrysoperla*. Adults of *C. carnea* poisoned with any of the 2 insecticides laid markedly less eggs than normal adults.

Descriptors/Keywords: FECUNDITY, LONGEVITY, FIELD PEST

Record - 1378

EVALUATION OF SOME INSECTICIDES AGAINST THE MEALY CABBAGE APHID AND CABBAGE BUTTERFLY ON RAPE IN SWAT PAKISTAN

ZAMAN M

SARHAD J AGRIC 5 (4). 1989. 403-406.

Full Journal Title: Sarhad Journal of Agriculture

Language: ENGLISH

ABSTRACT

Formothion EC (24.75 ml a.i./100 L water) and primicarb DP (25 g) were found consistently effective against the mealy cabbage aphid, *Brevicoryne brassicae* (L.). Third to 6th and then 10th-11th day post-spray rains did not affect their toxic residues, probably due to their absorption and translocation in the rape plants, as secondary infestation of the aphids did not occur. Alphamethrin EC (7.5 ml) and fenobucarb EC (50 ml) were found effective for a short period against the aphids during this situation. Alphamethrin (5 ml) and cyflothrin EC (2.5 ml) caused immediate kill of the larvae of cabbage butterfly, *Pieris brassicae* L., while diflubenzuron WP (15 g) and triflumuron WP (15 g) were chronically effective against the larvae. Aphids were, however, not controlled by these insecticides probably due to the washeffect of rains on the day after spraying and then 5th-6th day following spraying.

Descriptors/Keywords: BREVICORYNE-BRASSICAE, PIERIS-BRASSICAE, ALPHAMETHRIN, EC, FENOBUCARB, DIFLUBENZURON, TRIFLUMURON, ABSORPTION, TRANSLOCATION

Record - 1379

EFFECTS OF DIFLUBENZURON ON BLACK VINE WEEVIL OTIORHYNCHUS SULCATUS
OVIPOSITION EGG VIABILITY AND ADULT LONGEVITY COLEOPTERA CURCULIONIDAE
ZEPP D B; DIERKS A Z; SANDERS D J

J KANS ENTOMOL SOC 52 (4). 1979. 662-666.

Full Journal Title: Journal of the Kansas Entomological Society

Language: ENGLISH

ABSTRACT

Adult black vine weevils, *O. sulcatus* (F.), were fed 3 diflubenzuron concentrations (0.05, 0.025 and 0.013 g AI[active ingredient]/l) sprayed on the foliage of yews, *Taxus media* Rehder. Fecundity of insects exposed to diflubenzuron was reduced 15-81% compared to that of insects fed nontreated foliage. Reduction of fecundity was caused by decreased oviposition and egg viability. Diflubenzuron did not affect adult longevity.

Descriptors/Keywords: TAXUS-MEDIA, FECUNDITY

Record - 1380

ZGOMBA, M., D. PETRIC, AND Z. SRDIC. 1983. EFFECTS OF SOME LARVICIDES USED IN MOSQUITO CONTROL ON COLLEMBOLA. MITT. DEUTSCHEN GESELLSCHAFT ALLGEMEINE UND ANGEWANDTE ENTOMOLOGIE . 4(1/3):92-95.

Record - 1381

ZGOMBA, M. 1982. REPORT OF INVESTIGATED PRODUCTS USED FOR MOSQUITO CONTROL IN 1982. REPORT INSTITUTE PLANT PROTECTION, NOVI SAD, YUGOSLAVIA.

Record - 1382

LABORATORY EVALUATION OF SYNTHETIC PYRETHROIDS DIMILIN AND THEIR COMBINATIONS ON MORTALITY AND BIOTIC POTENTIAL OF THE COTTON LEAFWORM SPODOPTERA LITTORALIS

ZIIDAN Z H; SOBEIHA A M K; TANTAWY S

BULL ENTOMOL SOC EGYPT ECON SER 0 (12). 1980-1981 (1984). 153-164.

Full Journal Title: Bulletin of the Entomological Society of Egypt Economic Series

Language: ENGLISH

ABSTRACT

The role of certain synthetic pyrethroids, dimilin and their mixtures as larval treatment at two LC25 values (estimates after 3 and 6 days from treatment) on the biotic potential of produced adults from treatment larvae of the cotton leafworm, were studied. Data indicate that sumicidin dimilin at the 1st 3 days value of LC25 revealed additive detrimental effect on pupation, emergence of moths, and potentiation harm on oviposition period and number of deposited eggs. The 2nd 6 days value of LC25 showed additive of harmful effect on oviposition period and number of deposited eggs, while caused antagonistic effects on the other parameters of biotic potential. Meotrin + dimilin at the 1st 3 days value of LC25 showed additive harmful effect on pupation and emergence. The 2nd 6 days value of LC25 caused additive harmful effect on population of treated larvae, as well as potentiation of harmful effect on emergence, average number of deposited eggs and incubation period. It is interesting to notice that ripcord/dimilin mixture when administered at 1st 3 days value of LC25 caused additive harmful action on pupation percent, pupal weight, emergence %, oviposition period, number of eggs and hatchability percent. The 2nd 6 days value of LC25 caused additive harmful effect on the average weight of pupae and number of deposited eggs.

Descriptors/Keywords: LARVA DEVELOPMENT, EMERGENCE, REPRODUCTION, INSECT GROWTH REGULATOR, SUMICIDIN, RIPCORD

Record - 1383

FINE STRUCTURE AND PERMEABILITY OF PERITROPHIC MEMBRANES OF CALLIPHORA ERYTHROCEPHALA M INSECTA DIPTERA AFTER INHIBITION OF CHITIN AND PROTEIN SYNTHESIS

ZIMMERMANN D; PETERS W

COMP BIOCHEM PHYSIOL B COMP BIOCHEM 86 (2). 1987. 353-360.

Full Journal Title: Comparative Biochemistry and Physiology B Comparative Biochemistry

Language: ENGLISH

ABSTRACT

1. Three tube-like peritrophic membranes are secreted in the anterior part of the midgut of adult *Calliphora erythrocephala* Mg. (Insecta, Diptera). 2. Inhibition of protein synthesis with cycloheximide resulted in a disturbed formation of these peritrophic membranes. 3. Altered parts permitted the passage of fluorescence-labelled dextrans with higher molecular weight than in untreated flies. 4. Inhibition of chitin synthesis by Polyoxin D, Dimilin, and Captan and of the formation of chitin-containing microfibrils by Calcofluor resulted in a more pronounced enhancement of permeability. 5. Reduction of the chitin content may destabilize the protein moiety. 6. This destabilization is more efficient on permeability than a direct inhibition of protein synthesis.

Descriptors/Keywords: CYCLOHEXIMIDE, PROTEIN SYNTHESIS INHIBITOR, POLYOXIN D, DIMILIN, CAPTAN, CALCOFLUOR, CHITIN SYNTHESIS INHIBITORS, MIDGUT

Record - 1384

EFFECTS OF DIMILIN UPON BUDDING HYDRA

ZNIDARIC D; KALAFATIC M; LUI A

Z MIKROSK-ANAT FORSCH (LEIPZ) 101 (2). 1987. 221-228.

Full Journal Title: Zeitschrift fuer Mikroskopisch-Anatomische Forschung (Leipzig)

Language: ENGLISH

ABSTRACT

The effects of dimiline (diflubenzurone) upon hydra vary which depends upon its concentration. 0.07% solution is lethal and 0.06 and 0.05 solution cause considerable morphological and cytohistological changes and also cause an intensified budding. It seems that dimiline increases the monosaccharide concentration in cells. Monosaccharides are osmotically active and attract water. Cells swell and therefore change their position and "spring" out of the gastrodermal layer. As the cells change their

position their differentiation also changes.

Descriptors/Keywords: INSECTICIDE, MONOSACCHARIDE, WATER, MORPHOLOGICAL CHANGES, CYTOHISTOLOGICAL CHANGES, BUDDING INTENSIFICATION, CELL SWELLING, ALTERED, DIFFERENTIATION

Record - 1385

TYROSINE METABOLISM IN AEDES AEGYPTI 3. COVALENTLY BOUND AROMATIC COMPONENTS OF THE PUPAL CUTICLE

ZOMER E; LIPKE H

INSECT BIOCHEM 13 (6). 1983. 577-584.

Full Journal Title: Insect Biochemistry

Language: ENGLISH

ABSTRACT

Pupal integument from larvae treated with MON 0585 and diflubenzuron was degraded with proteolytic enzymes to release the aromatic intermediates accumulating as a result of arrested sclerotization. The arylated peptides were isolated by chromatography and by derivatization of phenoxy radicals with immobilized F-dinitrobenzene. Colorimetric and radiometric analysis revealed that each peptide of MW 5500 included 2 tyrosines within the primary structure and 3 moles of bound non-tyrosine phenoxy adducts. The benzenoid adducts were brown in color, retained label originating from L-[ring-¹⁴C]tyrosine in the diet and exhibited absorbance maxima at 320 nm. In the mass spectrograph the most abundant isolate, m+ 575 (C₂₉H₄₅N₅O₇) fragmented to a diaminoquinone (m/z 152 C₇H₈N₂O₂) and a larger isoalloxazine-like material. A 2nd fraction, m+ 443 (C₂₁H₃₇N₃O₇) fragmented to m/z 161 (C₉H₁₁N₃) representing a partially unsaturated nitrogenous heterocyclic structure. Strong IR bands confirmed the condensed rings and amide functions in the heterocyclic aromatic products. Following acid hydrolysis, the labeled metabolites retained absorption bands characteristic of ring condensations and were strongly basic in accord with amide cleavage. The putative bridged intermediates failed to respond to tests for ketocatechols, bityrosine or ortho-diphenols. These properties imply the presence of 2 types of bridge in culicine pupal integument, each capable of linkage to the side chain of an amino acid residue in the exoskeletal polypeptides. In the presence of the 2 inhibitors of pupal development, the initial coupling to a protomer apparently proceeds normally but subsequent peptidylation affording a bridged construct is blocked.

Descriptors/Keywords: PROTEOLYTIC ENZYME, SPECTROPHOTOMETRY, RADIO LABEL, DIFLUBENZURON, CHROMATOGRAPHY

Record - 1386

TYROSINE METABOLISM IN AEDES AEGYPTI 2. ARREST OF SCLEROTIZATION BY MON-0585 2,6-BIS-1,1-DIMETHYLETHYL-4-I-METHYL-1-PHENYLETHYL PHENOL AND DIFLUBENZURON

ZOMER E; LIPKE H

PESTIC BIOCHEM PHYSIOL 16 (1). 1981. 28-37.

Full Journal Title: Pesticide Biochemistry and Physiology

Language: ENGLISH

ABSTRACT

Lipid from cuticle and viscera sequestered 35 and 40%, respectively, of the diflubenzuron taken up by larvae of *A. aegypti*. The rate of toxicant uptake was linear for the first 2 days of exposure. Following treatment of larvae with a mixture of MON 0585 and diflubenzuron, tanning agents and pigments were discharged into the rearing medium during pupation. In the course of poisoning, body fluids and cuticle accumulated soluble arylated peptides and tanning agents at the expense of the sclerotized mucoprotein complex. Changes in protein composition of the integument were indicated by decreased titers of bound phenylalanine and serine in both the immature and pupal stages; however, visual symptoms of poisoning

were absent in larvae. Three amino acids linked to citric acid cycle oxidations (aspartic and glutamic acids and proline) declined sharply in body fluids of poisoned animals, while a conjugate resembling N-acetyldopamine-O-glucoside was retained. These biochemical lesions suggest that the action of MON 0585 was due to loss of benzenoid precursors of the crosslink to the rearing medium; faulty active transport of tanning agents; and unavailability of receptor sites for arylating groups on side chains destined for bridging.

Descriptors/Keywords: LIPID, TANNING AGENT, PIGMENT, MUCO PROTEIN COMPLEX, PHENYL ALANINE, CITRIC-ACID CYCLE OXIDATION, N ACETYL DOPAMINE O GLUCOSIDE, BIOCHEMICAL LESION, RECEPTOR SITE

Record - 1387

EVALUATION OF DIFLUBENZURON FOR MEXICAN BEAN BEETLE EPILACHNA VARIVESTIS COLEOPTERA COCCINELLIDAE CONTROL AND IMPACT ON PEDIOBIUS FOVEOLATUS HYMENOPTERA EULOPHIDAE

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ABSTRACT

Laboratory and field studies were conducted to determine the effect of diflubenzuron on the Mexican bean beetle (MBB), *E. varivestis* Mulsant, and a larval parasite, *P. foveolatus* (Crawford). Laboratory tests showed that the compound, at concentrations of 0.01, 0.10 and 1.00% AI [active ingredient], had no significant effect on parasite oviposition, fecundity, emergence rate, or developmental time when topically applied to either adult parasites before oviposition or parasitized MBB larvae 10 days after oviposition ($P > 0.01$). Profound interference of parasite development does occur when diflubenzuron is applied to MBB larvae just before parasite oviposition or to MBB larvae 4 days after parasite oviposition ($P < 0.01$). In the field study, 3 rates of diflubenzuron at 0.018, 0.053, and 0.088 kg of AI/ha were tested along with carbaryl at 1.12 kg of AI/ha; a control also was included. Diflubenzuron gave approx. 70% control of the MBB, and carbaryl gave approx. 83% control. Parasite emergence was not significantly different ($P > 0.01$) in diflubenzuron- and carbaryl-treated plots.

Descriptors/Keywords: OVIPOSITION, FECUNDITY, TOPICAL APPLICATION, CARBARYL

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DEVELOPMENTAL EFFECTS OF DIFLUBENZURON ON THE MEXICAN BEAN BEETLE AND THE LARVAL PARASITE PEDIOBIUS FOVEOLATUS

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Descriptors/Keywords: ABSTRACT, EPILACHNA-VARIVESTIS, INSECT GROWTH REGULATOR DEVELOPMENT TIME, OVIPOSITION, EMERGENCE RATE, FECUNDITY, TOPICAL APPLICATION



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